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Building Services news

CIBSE initiative opens exciting workshare horizons

CIBSE IRELAND workshare exchange programme

Published by ARROW@TU Dublin, 2019

Now you can have the best of both worlds

Let’s talk about the low-carbon, cost-effective alternative to traditional heating and cooling technology. Let’s talk Hybrid VRF: an innovative, modern solution, offering a highly efficient system that doesn’t require the need for leak detection. Better for you, better for your customers and a sure way to achieve the optimum comfort control you’re looking for.

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youtube.com/mitsubishielectric2

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Honest dialogue is essential

How refreshing to finally see the energy/sustainability issue raised to more reasoned debate, and even considered arguments. Correspondence to the Letters page of the *Irish Times* and pronouncements from various sector-interested bodies are most encouraging. Indeed, these same disparate – even contradictory – views are reflected within the pages of this edition of *Building Services News*. This is surely an encouraging development.

Currently, all energy types are in widespread use throughout Ireland. That is an inescapable reality. The challenge we face is in how to make the transition from fossil fuels to cleaner energy forms. The only certainty is that we simply cannot switch from one energy source to another overnight.

So, rather than pitting the different sectors against one another, the ideal scenario – especially in the medium term – is to devise a forum so they all positively, and honestly, engage with one another to get the best outcome, not for themselves, but for Ireland Inc.

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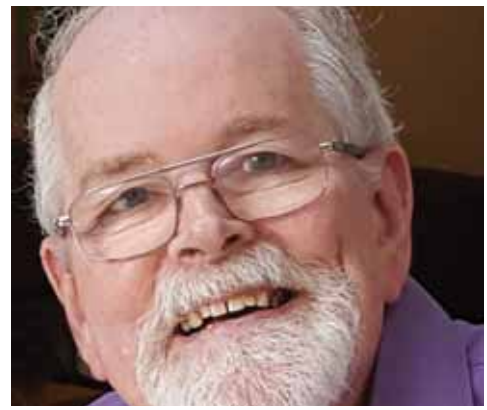

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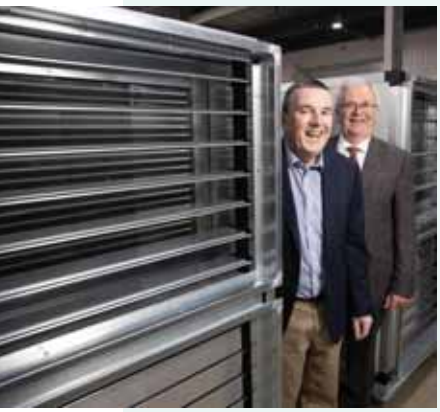
NEWS AND PRODUCTS

EDPAC expansion means 50 new jobs

Data centre and air cooling systems manufacturer EDPAC International announced the creation of 50 new jobs as An Tánaiste, Simon Coveney, TD officially opened the company's newly-extended manufacturing plant in Carrigaline, Co Cork recently.

The Irish-owned company has an impressive client list with installations at Doha Airport, Qatar's Al Wakra Stadium, Hong Kong's Metro, Bolivia's Itaipu Dam, Copenhagen's City Link Metro, the BBC in the UK, most hospitals in Ireland and Páirc Uí Chaoimh in the company's home county.



Ciaran Coughlan, Director and Noel Lynch, Managing Director, EDPAC international in the newly-extended manufacturing site at Carrigaline.

EDPAC International will continue to operate from its sites in Newmarket (North Cork) and from Carrigaline where more than 80 people are currently employed. The company is actively recruiting a further 50 employees over the next 24 months, particularly design engineers, refrigeration technicians, plumbers, electricians, quality engineers and logistics personnel.

The EDPAC manufacturing site in Carrigaline now stands at 5000sq m and is equipped with state-of-the-art facilities including a new environmental test laboratory, dedicated factory witness test facility, and a new canteen. The Newmarket facility supports the Carrigaline factory, providing prefabricated components and manufacturing high-quality air handling systems to customer specifications.

Stelrad church warmth

St Molleran's Church, the Parish Church of Carrickbeg, Co Tipperary, incorporates remnants of a 14th century Franciscan Abbey and, prior to the new heating system installed recently, was a little draughty. It was originally built in 1827 on the site of the Abbey and dedicated to Maol Odhráin – anglicised to Molleran – the patron saint of Carrick-on-Suir.

The new heating system, incorporating Stelrad Concord radiators, was part of a €700,000 renovation and refurbishment project that saw the church restored to its former glory. Project Manager was Jimmy Flynn and the heating engineer was Michael Allen.

Brian Hennessy, Stelrad's Country Manager, Ireland, said: "It was a great little project to be involved in and we were delighted that they went for the Concord design radiators to make the whole heating system just a little bit special. We understand the congregation is very happy with the warmth in the church now."

Contact: Brian Hennessy, Stelrad Country Manager, Ireland. Tel: 087 – 210 2530; email: brian.hennessy@stelrad.com

Right: St Molleran's Church, Carrickbeg, Co Tipperary.

O'Connor elected LAI Chair

Paul O'Connor, Director, ACEC Distributors was elected Chairman at the recent Lighting Association Ireland (LAI) annual general meeting in the RDS. Reflecting the growing strength and influence of LAI, there was a capacity attendance and, as always, full engagement of all members. *Building Services News* will have an full interview with Paul in our next issue.

TI-year students look to engineering

Over 450 transition-year students took part in Engineers Ireland's *Engineering Your Future* programme at 11 third-level institutions across Ireland throughout the month of May.

With over 94% of engineering employers in Ireland reporting skills shortages as the main barrier to growth within the engineering sector, the *Engineering Your Future* programme aims to inspire future generations of STEM talent in Ireland by providing transition-year students with a meaningful, practical insight into the exciting and diverse world of engineering.

The annual EI transition-year initiative has grown from five programmes in 2013 to 17 in 2019 and has engaged over 1700 students. Institutions taking part were GMIT, IT Tallaght, IT Carlow, Maynooth University, Waterford IT, IT Tralee, TU Dublin (DIT), UCC, UCD, Cork IT and IT Sligo. A summer version of the programme will be held by NUI Galway in June.

Contact: www.engineersireland.ie

xylem
Let's Solve Water

SmartBall® Technology

A FREE-SWIMMING TOOL FOR LONG DISTANCE WATER AND WASTEWATER INSPECTIONS

Product of the Show Award winner at the SEAI Energy Show 2019

How SmartBall works?

The SmartBall® platform is a free-flowing tool for the assessment of pressurized water and wastewater pipelines 8 inches and larger. It can complete long assessments in a single deployment without disruption to regular pipeline service.

The tool is inserted into a live pipeline and travels with the product flow for up to 21 hours while collecting pipeline condition information. It requires only two access points for insertion and extraction, and is tracked throughout the inspection at predetermined fixed locations on the pipeline.

Applications

Owners of water and wastewater pipelines deal with a variety of infrastructure challenges; the SmartBall platform can collect a variety of pipeline condition information in a single deployment that helps owners manage their assets more effectively.

pure TECHNOLOGIES

Leak Detection

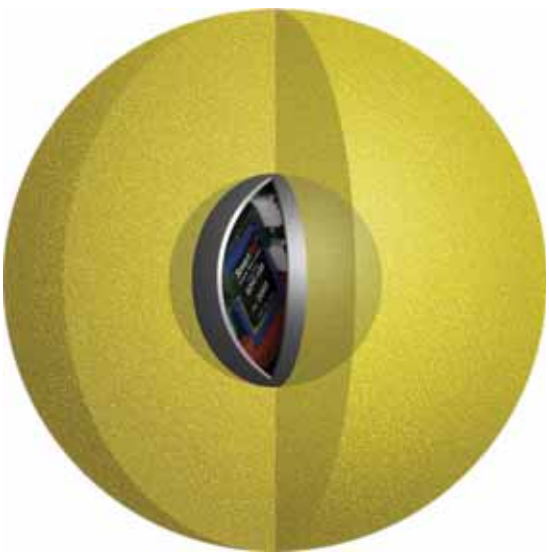
The tool is equipped with a highly sensitive acoustic sensor that can detect pinhole-sized leaks on pressurized pipelines. The SmartBall platform has been able to identify leaks as small as 0.028 gal/min (0.11 liters) and has a typical location accuracy of within 6 feet (1.8 meters).

Gas Pocket Detection

The acoustic sensor is also able to identify the sound of trapped gas within pressurized mains. The presence of trapped gas can adversely affect pipeline flow or lead to degradation of the pipe wall in sewer force mains.

Inspection Benefits

- Easy to deploy through existing pipeline features
- No disruption to regular pipeline service
- Can complete long inspections in a single deployment
- Highly sensitive acoustic sensor that can locate very small leaks
- Can identify features relevant to the operation and mapping of the pipeline
- Indicates the position of leaks, and gas pockets relative to known points



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Xylem Water Solutions Ireland Limited
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Email: kevin.devine@xyleminc.com
www.xylem.com/ie

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NEWS AND PRODUCTS

New style Octabuild Awards

The Octabuild Awards have been revamped for 2019 with a renewed focus on excellence that reflects the modern builders merchant sector in terms of business management, customer service, sales and marketing, innovation, leadership, diversity, partnership and communication.

Major changes in the entry process mean that builders merchants can now enter Regional and National Awards, in addition to the Category Awards. Significant changes have also been made to the judging process. There are now three independent judges who will assess all entries and then visit the shortlisted entries. Closing date for entries is 1 July 2019.

To enter the Awards see www.octabuildawards.ie

EnerPhit certification at Sallynoggin

Rochestown House, Sallynoggin, Co Dublin is the first and largest social housing scheme in Ireland to be awarded EnerPhit certification, a Passive House standard for refurbishment of existing buildings.

Built in the 1970s, Rochestown House had become run down and the accommodation – largely bedsits – required significant upgrading and modernisation. The project started with a full overview of the site on the basis of regeneration, re-using and re-adapting existing buildings for elderly residents. It has now been completely transformed and accommodates 34 one-bed apartments, thanks to a deep energy retrofit inspired by passive house principles.

Rochestown House also won the "Best Sustainable Project" Award from the Royal Institute of Architects of Ireland. "It is an excellent example of environmental, social and economic sustainability in housing" according to Andrée Dargan, County Architect and dlr Energy Performance Officer.

Rochestown House is now one of 20 pilot projects in nine countries in the European Pilot scheme called EuroPhit which looks at how housing stock across Europe can be retrofitted to achieve a high energy standard. The initiative was mostly funded through the Department of Housing, Planning and Local Government and a Sustainable Energy Authority of Ireland's Better Energy Communities grant.

Photo shows Ms Andrée Dargan, County Architect and dlr Energy Performance Officer with An Cathaoirleach, dlr, Councillor Ossian Smyth.

Riello's premix now up to 3MW

Riello RX premix packaged burners are now available in outputs up to 3MW, offering NOx levels of less than 40mg/kWh, with high turndown ratios of up to 8:1 across a wide range of models.

Riello RX burners feature an exclusive design that includes a patented woven wire gauze "sock" covering the combustion head cylinder. Gas and combustion air are mixed upstream of the combustion head and then pass through precision-located ports and the gauze "sock" to ignite on the external surface of the combustion head. This arrangement enables a very compact flame with a diameter directly related to the burner firing rate, ensuring precise heat control and optimum efficiency at all loads.

The high turndown makes RX burners ideal for systems with variable heat loads where low NOx levels are also required. These range from condensing boilers through to process applications such as spray booths and industrial ovens.

RX burners can be used in conjunction with variable speed drive motors to reduce electricity consumption and lower noise levels even further than the typical 30% noise reduction compared to many other combustion applications. Control options include progressive two-stage operation and fully modulating via 0-10V or 4-20 mA. Full electronic control with operational and diagnostic display is also available.

For further information visit www.rielloburners.co.uk

IS 820 revised gas standard

An important revision has been made to IS 820, the standard for non-domestic gas installations aimed at commercial gas installers. It specifies requirements for the design, operation, maintenance and testing of natural gas and LPG installations, to the point of delivery of the gas to appliance(s) in non-domestic premises. Under CRU regulations it will be a legal requirement that non-domestic gas works (natural gas and LPG) be carried out by a Registered Gas Installer from January 2021.

NSAI's Director of Standards and Metrology, Enda McDonnell, told *Building Services News*: "IS 820 has been specifically revised to ensure current good practice is reflected in the new edition, supporting the implementation of the extended RGI scheme".

The main changes to the standard include additional and revised guidance/requirements for:

- outdoor catering and mobile catering and display units;
- external and internal buried pipework;
- strength and soundness testing;
- over-pressure protection and regulator systems on LPG cylinder installations;
- safety inspections of existing installations.

Contact: www.nsai.ie

NEWS AND PRODUCTS

WIT student is IrelandSkills Live National BIM Champion

Waterford Institute of Technology student Peter Jenkins – a fourth-year student on the BSc (Hons) in Architectural & BIM Technology course – won the IrelandSkills Live National Skills Final in the BIM (Building Information Modelling) category.

The finals were held at the RDS over three days and Peter was up against another 10 students, including fellow WIT students Kevin Shannon, Luke O'Keeffe and Julija Fedotova.

The BIM category Peter won recognises the achievements of students in creating 3D computer-generated building models that provide building analytics, greater efficiency, reduce waste, and allow for the management, and facilities management, of buildings and infrastructure.

More information at www.wit.ie/wd195

Photo shows Peter Jenkins, National BIM Champion and Malachy Matthews, Chief Examiner, TUD with President and Sabina Higgins.

Core AC appoints Munster rep

Core Air Conditioning Ireland has appointed Shane Murphy as Munster Sales representative. Shane has a strong sales and project management background in the HVACR industry and business development, and is a valuable addition to the existing Core team.

Shane's role is to expand the Core AC product range throughout the Munster region, especially chiller, close-control and air handling products from Carrier, Vertiv, Clint and Novair.

Contact: Shane Murphy, Core Air Conditioning Ireland. Tel: 086 – 462 4566; email: shane.murphy@coreac.com

NEWS AND PRODUCTS

TIDL apprentice sponsorship

Thermal Insulation Distributors Ltd (TIDL) has sponsored the WWETB sheet metal and industrial insulation apprentice course held in WWETB's Waterford Training & Education Centre. Eleven students participated in the 22-week course with Stephen Sharpe, SECOM Contractors, graduating as Apprentice of the Year. He is pictured here (centre) with Shaun Gillen, OEM/HTI Sales Manager, TIDL, Joe Mahon, WWETB Waterford Training Services Assistant Manager, Mick Kelly Jnr, WWETB Waterford Sheet Metal & Industrial Insulation instructor and Padraig Gillen, CEO, TIDL.

Kingspan Light + Air certified

Kingspan Light + Air, the specialist provider of blended solutions which support increased comfort and safety in buildings, has achieved IFC certification for the installation and commissioning of smoke control systems.

IFC certification (Certificate number: IFCC 3186) provides independent verification that Kingspan Light + Air conforms to the installation and commissioning requirements of IFCC scheme DI19, "Requirements for Contractors Installing Smoke Control Systems".

Jonathan Dore, Commercial Director, Kingspan Light + Air, said: "We have long strived to operate to only the most robust quality levels – developing in-house processes that have enabled us to establish a highly-experienced engineering team that has extensive expertise in relation to smoke management. Achieving third-party certification by IFC Certification gives the market further confidence and peace of mind when partnering with Kingspan Light + Air to safeguard a life safety system and ensure it is fit for purpose."

Niall Duffy joins Vent-Axia

Niall Duffy has joined the Vent-Axia team as the new Specification Manager for both the Republic and Northern Ireland. His role will consist of assisting mechanical consultants and architectural practices to develop Vent-Axia product specifications for tender applications in commercial and residential projects.

Niall has a Bachelor of Engineering Degree in Technology of Building Services from DIT Bolton St where he won the President's Gold Medal Award for his dissertation in 2009. He has a higher degree from Heriot Watt University Edinburgh in Architectural Engineering. Both qualifications are recognised by CIBSE.

After graduation he worked with high-profile mechanical renewable energy companies as a mechanical design engineer, where he developed a range of skills for a wide range of services across all sectors of the industry. As part of his new role he will also provide product training across the full Vent-Axia portfolio.

Contact: Niall Duffy, Specification Manager, Vent-Axia. Tel: 085 – 808 2607; email: niall.duffy@vent-axia.com

Saint-Gobain Roadshow

Saint-Gobain Build Better Roadshow will travel to Galway (25 June), with Waterford and Limerick following in October and November. This follows the success of the first two Build Better Roadshows which took place in Belfast (April) and in Cork (May).

The Build Better Roadshow provides local construction professionals with the opportunity to undergo upskilling to meet the requirements of today's sustainable building agenda, earn CPD points on Fire Safety Compliance and Sustainable Housing, and learn about new Saint-Gobain products.

The roadshows comprise a morning and afternoon seminar and feature a host of expert guest speakers. They cover everything from the most recent changes to Fire Regulations Part B to upcoming energy regulations such as nZEB. The seminars also cover a variety of site performance issues such as airtightness detailing and best practice for acoustic performance.

Kieran Holohan, Marketing Director of Saint-Gobain Ireland, said: "The Build Better Roadshow has been developed to address the rising skills shortage in Ireland. The industry is under exceptional pressure to upskill and Saint-Gobain is dedicated to leading the progression of best practice within the sector through our new Better Build Roadshow and our Technical Academy. We look forward to offering more events nationwide this year to help meet the demand for construction upskilling."

For details see: www.saint-gobain.ie/technicalacademy

Photo shows Garrett Quinn, engineer at GP Developments with Mark Chesney, Installations and Service Manager, Beam Vacuum & Ventilation; Jason Horrex, Training Manager, Saint Gobain Technical Academy and Paul McAlister, Director at Paul McAlister Architects.

NEWS AND PRODUCTS

Hitachi appoints new heating team

Hitachi Cooling & Heating has repositioned its heating team within the business with the appointment Kevin Lucas as National Sales Manager (Heating) and Key Account Manager, Lisa Bishop.

Kevin has 20 years experience in low-carbon and renewables technologies, working mainly in technical sales and business development roles. He will work closely with Hitachi's distributor network to help develop the air source heat pump business, and also actively pursue specification and project opportunities.

Supporting Kevin is Lisa Bishop, who many Hitachi customers will know already. Lisa has been part of the team based in Maidenhead for over 14 years, most recently working as a customer-facing Sales Administrator.

Speaking about the new team Hitachi's Managing Director, UK-Ireland, Gboyega Obafemi said: "With a new range of R32 air source heat pump products being launched in the coming months, I am delighted that Kevin is on board and Lisa's considerable Hitachi knowledge and experience will help shape the new heating team at this pivotal time."

Top right: Kevin Lucas, who has been appointed National Sales Manager (Heating).

Right: Key Account Manager, Lisa Bishop.

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Easy to install and compact plug and play booster set.

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Equipped with pressure transducer, non-return valve, controlled starting current and temperature.

Includes programmable software and, thanks to the analogic pressure sensor, the re-start pressure can be set. An ideal solution that allows a reduction in size, or removal, of the expansion tank.

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- programmable re-start pressure
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- voltage and current control
- monitoring of maximum starting current
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- built-in non-return check valve

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water passion

Pressurised system with integrated pressure control

Calpeda e-idos is a line of energy efficient pump solutions from Calpeda Ireland that are designed on a "platform" philosophy whereby the base and hydraulic part adapt to all pump models of the same family, and for all the three set versions (fixed-speed, variable-speed, mixed-speed).

These plug-and-play solutions have a compact design and use 24% less energy when compared to a standard pump.

A key element of the unique design is integration with the hydraulic part. The motor and the electronics are designed as a single unit to reach maximum performance. Not just a simple pump, this is more a booster system with integrated pressure control that is easy to install and is supplied ready to use.

SAFETY AND PROTECTION

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- pump blockage
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NEWS AND PRODUCTS

Cleaner, cheaper power

A new form of cleaner and cheaper temporary power for use on construction sites and at industrial locations is now available from SSE Enterprise and Pure World Energy (PWE). Using the latest gas-powered microturbine technology, the "Semi-Permanent Power" solution will help developers cut harmful emissions and energy costs, making it particularly suitable for construction sites.

The joint venture between SSE Enterprise and Pure World Energy (PWE) uses technology from US company Capstone, developed to meet strict California emissions levels. The microturbines are capable of providing on-site temporary or medium-term power that is ultra-low in NOx (nitrogen oxides) and SOx (sulphur oxides) emissions – especially compared with diesel generation.

The modular design of the microturbines means they can be installed from as low as 65kVA to over 10MVA to match individual customer demand, making the technology more flexible and scalable for a wider range of projects. Another unique selling point of this microturbine solution from SSE Enterprise and PWE is that the end-user only pays for the energy they use. There are no costs associated with the installation, connection or maintenance of the units.

For more information see www.sse-enterprise-and-pwe.com

Sean Fitzpatrick, CEO of Pure World Energy pictured with Patrick Rooney, Regional Director, SSE Enterprise announcing details of Semi-Permanent Power.

Green victories a false dawn?

What is the fundamental value of the very significant gains for green candidates in the recent local and European elections? Indeed, are they fundamental at all? Many commentators argue that, for the most part, it was the well-heeled electorate who voted green.

The joke doing the rounds in one south county Dublin constituency was that these voters arrived at the ballot centre in their very large, four-by-four, diesel vehicles. It is not enough to pay lip-service to being green, you have to actually live it.

It is important that the green initiative gains momentum. However, it needs to be genuinely embraced by society. Otherwise, it will be nothing more than yet another false dawn.

Energy from water

A new Code of Practice offering guidance on harnessing energy from water in the ground for heating and cooling has just been published. Groundwater source heat pumps (GWSHPs) have huge potential to provide low-carbon heating and/or cooling to buildings and are an under-used technology.

***CP3 Open-loop groundwater source heat pumps: Code of Practice* aims to encourage adoption of the technology and raise standards across the supply chain, to ensure GWSHPs are designed, built, operated and maintained to a high standard.**

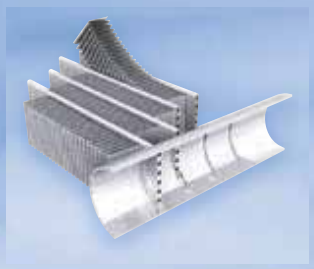
The Code has been produced as a joint project between the Chartered Institution of Building Services Engineers (CIBSE) and the Ground Source Heat Pump Association (GSHPA) with the backing of the Heat Pump Association (HPA).

BSRIA's circular economy

BSRIA is exploring the potential of current industry practices to transition towards a scircular economy approach. Modular and off-site construction, improvement in construction processes using "soft landings", better operation and maintenance of building technical systems through testing, thermographic surveys, failure assessment and whole-life-cycle analysis are seen by BSRIA experts as methods that will support adoption of the circular economy principles in building services.

Strong leadership with a coherent vision based on well-informed research is required to create a roadmap that can translate the high-level principles to sector-specific processes of the built environment. See www.bsria.co.uk

Industry leading **Carrier technologies**



THIRD GENERATION OF "W" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- Increased reliability with new aluminium alloy
- Significantly reduces refrigerant charge (-40% vs cu/al coils)
- More compact units (-25% vs previous 30XAV generation)
- Enviro-shield™ coating for mildly-corrosive environments
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SIXTH GENERATION OF VARIABLE-SPEED FLYING BIRD™ FANS WITH AC OR EC MOTOR

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- Fanblade design inspired by nature
- High-efficiency version with AC motor technology
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POWERFUL SMART ENERGY MONITORING FUNCTION

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COVER STORY

CIBSE initiative opens exciting workshare horizons

The CIBSE Ireland Workshare Exchange Programme is a new initiative devised to build and strengthen relationships between engineering and contracting companies in the building services sector. It is individual rather than company focused, the core of the concept being that two people – one from a consultancy and the other from a contracting company – workshare on a particular project over a set period of time.

The objective is to enhance the experience of the participating engineer and contractor so that they each gain insights into the working practices of the other discipline (contractor/design consultancy), and to expose them to the everyday challenges faced in project management, but from the other side of the fence!

The participants in the inaugural programme are Tom Egan Project Engineer, Winthrop Engineering & Contracting and Kerry Taylor, Design Engineer, Axiseng consulting engineers. The project is Spencer Dock in the north Dublin docklands.

This new workshare exchange programme commenced in May and is scheduled to run to the end of July. During this period Kerry and Tom will carry out their normal duties on the project, but will also work in the respective exchange company for one day a week over the course of the three months. To guide and support them within each company there are two mentors – Richard Vaughan, Principal Engineer, Axiseng and Thomas Sheridan, Project Manager, Winthrop Engineering & Contracting.

At the end of the exchange programme the two participants will provide feedback to the participating companies covering topics such as:

- Scope of exchange work;
- Key lessons learned;
- What I will do differently as a result of this programme?
- How has the programme shaped my view of building services?

They will also be presented with a CIBSE Ireland Exchange Programme certificate.

In addition, there will be a major spread in the August/September issue of *Building Services News*. Here both Kerry and Tom will detail their experience of the workshare exchange programme, articulate their respective learning outcomes, explain what they would change, and suggest ideas for further development of the programme going forward. ■

Below: Cian Dowling, Director, Axiseng with Tom Egan, Project Engineer, Winthrop Engineering & Contracting; Mona Holtkoetter, Chairperson, CIBSE Ireland; Kerry Taylor, Design Engineer, Axiseng consulting engineers; and Thomas Sheridan, Project Manager, Winthrop Engineering & Contracting.

S&P single room heat recovery Respiro Series

The S&P Respiro Series is a decentralised ventilation unit, with heat recovery, designed for use in single rooms in domestic or commercial applications. The elegant front cover design allows its adaptation to any environment which means that it is suitable for all manner and scale of project. Measuring just 160mm in diameter, it features a brushless motor with low consumption electronic control.

The ventilation system is delivered via a reversing motor and a ceramic heat exchanger with a performance up to 93%, and protected by a G3 filter at both ends. Designed for continuous operation, the unit adjusts the airflow proportionally in relation to the humidity level (model RD), ensuring excellent indoor air quality.

Key characteristics and benefits include:

- Ceramic heat exchanger;
- Alternative ventilation system;
- 70-second cycles in supply and extraction;
- Filter at both ends of the exchanger;
- Defrost control not required;
- Flow up to 30 m^3/h, Model 100;
- Flow up to 60 m^3/h, Model 150;
- Supply voltage 230V.

Model 150

- Two speeds per manual control.

Model 150 RD

- Three speeds;
- Wireless controller;
- Possibility of synchronising different equipment (up to 16);
- Proportional flow according to hygrostat;

Remote control model features include:

- Three speeds;
- Humidity control;
- Modes: Extraction only, supply only, reversing impulsion and extraction;

Contact: Soler & Palau Ventilation Ireland.
Tel: 01 – 412 4020;
email: sales.ie@solerpalau.com;
www.solerpalau.ie

Detail showing the elegant design of the front cover of the Respiro Series single room heat recovery unit and (above right) a cross-section of the interior showing the ceramic heat exchanger.

Multifunctional Belimo Energy Valve™ now also for 3-way applications

With the introduction of the 3-way Belimo Energy Valve™, the company has added a solution for 3-way applications to the existing Belimo Energy Valve™ range, thereby enabling Belimo to respond more effectively to customer requirements.

Moreover, with the integration of the Belimo Energy Valve™ into the Belimo Cloud, users can create their own account to have full transparency about the energy consumption in the cooling/heating application, from anywhere and whenever they want. The access to the Belimo online services makes life easier and gives the security of always having the best settings for the devices.

Integrated logic and sensors provide accurate coil performance data, and energy monitoring data is used to verify system performance during commissioning. It also acts as a baseline standard for system performance over time.

Transparency with respect to energy consumption for heating and cooling is achieved.

Cloud connection to control, optimise and monitor energy usage, and to provide advanced system data reporting, drives product and system functionality. Enhanced communication allows for expanded system integration and BMS control with the addition of Modbus RTU and TCP/IP. Other integration possibilities include BACnet MS/TP and BACnet IP, Belimo MP-Bus® and one analogue connection.

The Belimo Delta-T manager algorithm reduces pumping and chiller/boiler operating costs by increasing plant efficiency and mitigating low Delta-T syndrome.

The 3-way Belimo Energy Valve™

Power control allows the user to set the power output to a specific value in a linear response. Coil and valve characteristics become irrelevant. Coil control is now both pressure and temperature independent.

Optimisation and support via the Belimo Cloud

- Cloud Analytics offers recommended Delta-T settings by Belimo experts for efficient operation;
- System performance and stability are improved;
- Belimo Cloud reporting permits a complete overview of the current and previous performance data such as flows, energy consumption, power requirements and Delta-T;
- The most important performance indicators are shown in graphs;
- Belimo Cloud Support helps to commission and produce the optimum setting for the Belimo Energy Valve™ in all operating phases;
- Experienced Belimo technicians help users to solve technical problems;
- The online updates from the Belimo Cloud ensure that the Belimo Energy Valve™ is fully up to date at all times;
- Online downloads make updates easier;
- The Belimo Cloud stores the entire history of the Belimo Energy Valve™ and its operating data in one location. It provides access to all data over the entire life cycle of the Belimo Energy Valve™;
- The online database forms the basis for future operation optimisation.

Contact: Paul O'Neill,
Sales Manager Ireland, Belimo.
Tel: 086 – 245 2032;
email: paul.oneill@belimo.co.uk

CIBSE IRELAND AGM REPORT

MONA HOLTKOETTER APPOINTED CIBSE IRELAND CHAIRPERSON

There was a very large turnout for the CIBSE Ireland AGM in the Radisson Blu hotel in central Dublin recently, despite the atrocious weather conditions on the night. As always the occasion was business focussed but relaxed, and concluded with social interaction and networking over food and drinks.

In his outgoing address former Chairperson Paul Martin reflected on his two-year tenure, and especially on the many celebratory events – including the gala dinner and inaugural CIBSE Ireland building services awards – that were held to mark CIBSE Ireland's 50 anniversary. Paul has had a very successful term as Chairperson and leaves the post with the Institution's management structures and development strategies on a very firm footing.

His successor Mona Holtkoetter worked very closely with Paul over the two years, first as Secretary and then as Vice-Chairperson. Her transition to the role of Chairperson has proved seamless but she is now poised to make her own individual contribution and already has a number of new initiatives that will be announced over the coming months.

Given the challenging times that are in it, it is encouraging that CIBSE Ireland has such a dynamic structure, and officers and committee members who are totally committed.

As we approach the landmark year 2020, the Institution will provide not just industry guidance but also leadership in meeting these challenges. ■

Kevin Kelly, CIBSE Vice-President, gave an excellent resume on BCAR and summarised the negotiations that are underway between CIBSE Ireland and Engineers Ireland with regard to cooperation and mutual recognition in respect of BCAR sign off.

Front: Paul Martin, immediate past Chairperson with his successor, Mona Holtkoetter. Standing: Stephen Weir, Hon Secretary with Michael Curran, Vice-Chairperson and Barry Ronan, Hon Treasurer.

Group shot of those present for the CIBSE Ireland AGM.

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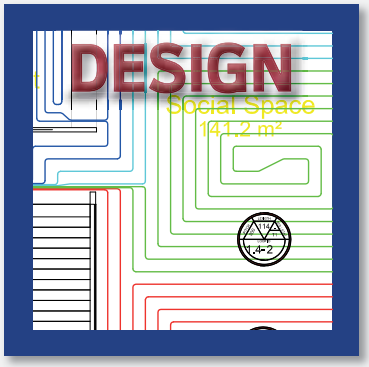

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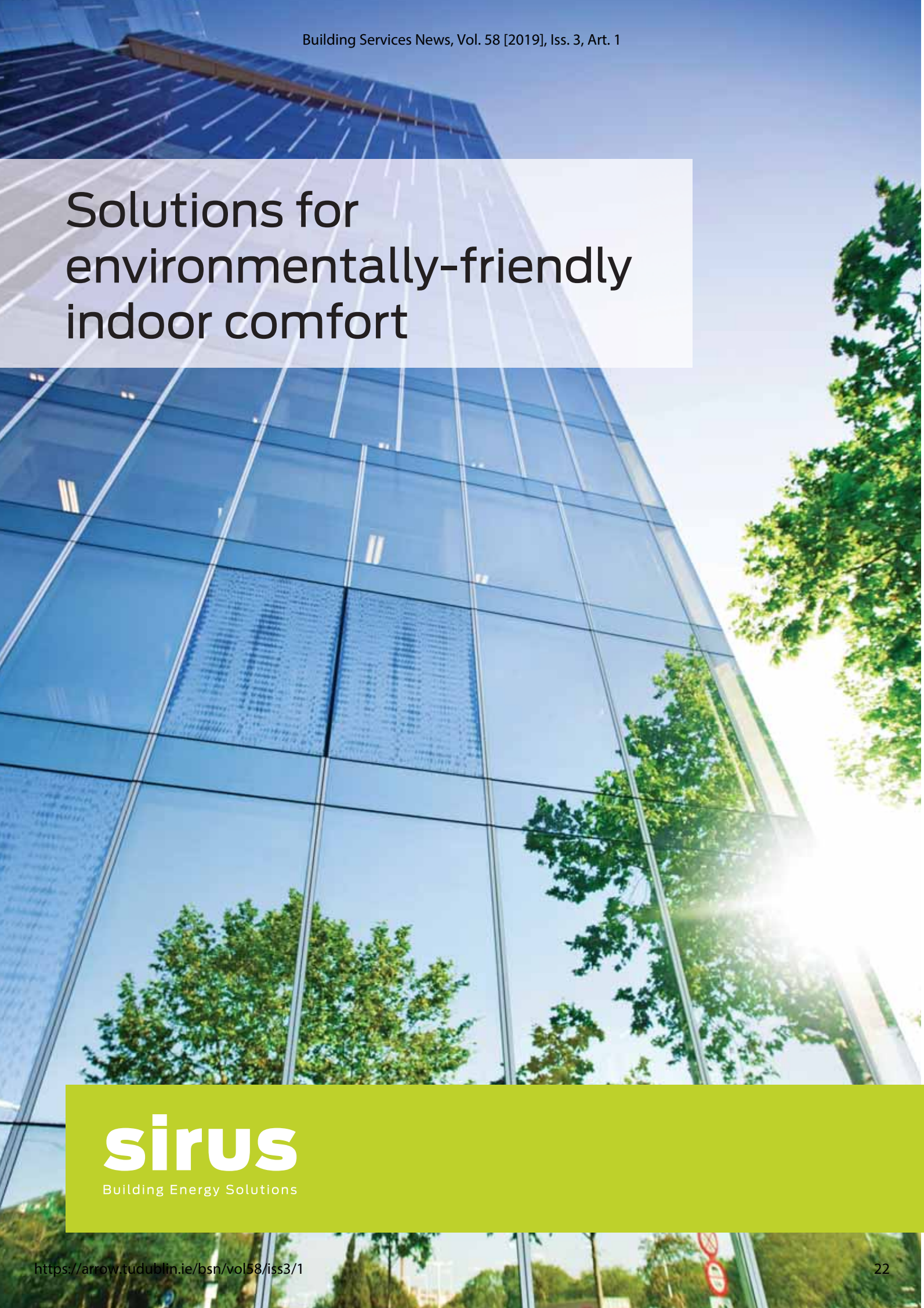
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Keith.Fitzpatrick@sirus.ie

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CIBSE YEN IRELAND ... MAKING CPD FUN!

The re-launch of the CIBSE YEN Ireland Branch kicked off in May with a unique event that combined a CPD-rated site visit (incorporating a competitive edge) to Glen Dimplex in Dunleer to view the purpose-designed Zeroth Energy System installation, and go-karting on the nearby Championship Circuit at the WhiteRiver Park kart racing complex.

The Zeroth Energy System is an innovative community heating network particularly suited to apartment complexes. It contains heat pump technology and utilises a refrigerant-free, water-to-water energy loop to provide heating, cooling and hot water. The unique design and operating temperatures allow a broader range of heating or cooling equipment to be used compared with current building design practice.

The site trip and CPD presentation involved a classroom-type interactive presentation followed by a tour of the purpose-designed, apartment-style demo installations. However, it was a site visit with a difference. It was not death by Powerpoint but rather a workshop format with the 16 young engineer participants divided into teams who competed for points based on the Zeroth presentation. Scores were allocated and recorded at the end of the "workshop" element, and then carried over to the go-karting competition at the WhiteRiver outdoor go-kart racing circuit located just a few minutes drive from the Glen Dimplex complex.

Standing: Chris Husk, JV Tierney with Ethan McGloin, JV Tierney; Oisin Hannon, TUD; David Ferrero, Waterman-Moylan; Kevin Wylie, CJK Engineering; Ewan O'Reilly, JV Tierney; Michael Solace, Gaffney Mechanical; John O'Reilly, Cobec Engineering; Keith Haughton, PJ Duffy & Sons; DeclanGlynn, PJ Duffy & Sons; Robert Farrell, Tritech Engineering; Seamus, Lane,Tritech Engineering.
Seated: Ryan Loney, JV Tierney and Chair, CIBSE YEN Ireland Branch, with Julia Grillio, Cobec Engineering, Mona Holtkoetter, Chair, CIBSE Ireland, Jonathan Jennings, Glen Dimplex Ireland and Eshwar Pawar, Waterman-Moylan.

On arrival the group once again assembled into their respective teams and, having been kitted out and briefed on the rules and safety regulations, got down to the serious business of racing. The excitement of the day was multiplied in spades by the fact the heavens opened just as the racing began, making driving conditions on the outside circuit like skating on ice!

The computerised timing system and the individual lap-time printouts charted everyone's progress so there was no possibility of cheating, save for the nudging that occured on the track. On conclusion of the racing the exhausted participants re-assembled to witness the team scores being tallied and added to the scores from the earlier workshop session to determine the overall winners.

While it may be clichéd to say so, it was not about the winning on the day, the interactive formula of the occasion ensuring that it was all about the taking part … it really was a case of CPD learning made fun.

If you are interested in joining CIBSE YEN Ireland Branch – and participating in future YEN events – contact Ryan Loney at email: rloney@jvtierney.ie ■

The participants kitted out in wet driving gear prior to taking to the WhiteRiver Park track.

Jonathan Jennings taking a group through the elements featured in the ventilation room.

The winning team – Jonathan Jennings, Glen Dimplex Ireland with Kevin Wylie, CJK Engineering, Ethan McGloin, JV Tierney, Eshwar Pawar, Waterman-Moylan, Ewan O'Reilly, JV Tierney and Mona Holtkoetter, Chair, CIBSE Ireland.

Do you remember? …

1986

In 1986 Jack William Nicklaus, the American golfer nicknamed The Golden Bear, is regarded as the greatest golfer of all time. During a career-span of more than 25 years he won a record 18 major championships while producing 19 second-place and nine third-place finishes. Nicklaus claims his 18th and final major championship at age 46 at the 1986 Masters, becoming the tournament's oldest winner.

Also in 1986 the industry-led BTU Golf Society is invited to participate in a head-to-head competition with its UK counterpart at the Belfry in Birmingham. The Irish team – which includes Ted Bourke – plays magnificently and wins the competition by an 18-point margin.

This annual event continues to this day with the venue alternating between Ireland and the UK every second year.

The victorious BTU Team of 1968 included (from left): Ted Bourke, Des Prendergast, Michael Curley, John Lawlor, Tony Gillen and Des O'Gorman. Seated: Tony Delaney.

seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

ENERGY AWARDS

Energy Manager of the Year 2018 Mike Pearson, College Principal, Gurteen College pictured with Julie O'Neill, Chairperson, SEAI.

2019 ENTRIES SOUGHT

Are you playing a role in building a low-carbon energy future for Ireland? Applications are now open for this year's SEAI Energy Awards. They are an excellent opportunity for consultants and contractors to showcase their achievements and inspire others to begin their own sustainable energy journey.

The Awards recognise and reward excellence in all aspects of energy efficiency and renewable energy. Winning entries will go well beyond the norms of sustainable energy best practice, excelling in some or all of these areas:

- Achieving multiple tangible benefits;
- Achieving significant energy demand reduction or clean energy deployment;
- Robust implementation approach;
- High levels of innovation;
- Strong potential for replication.

This year there are eight categories, all designed to recognise the achievements of individuals, businesses, community groups, researchers and public sector organisations.

Large Business – Exemplary Energy Management
This award is aimed at organisations with an energy spend of over €0.5 million (excluding VAT) that have demonstrated achievements in energy efficiency and decarbonisation over a protracted period.

Small and Medium sized Business
This award is aimed at small to medium businesses with an energy spend under €0.5 million, or less than 250 employees, that go beyond best practice in new or upgrade technology deployments or energy management solutions.

Leadership in the Public Sector
This award is aimed at public sector organisations that have demonstrated achievements in energy efficiency and decarbonisation over a protracted period.

Community
This award is aimed at community partnerships, groups and organisations leading change and championing sustainable energy at local level with a view to delivering energy savings and other social, environmental and climate benefits. It will focus on those influencing how the community uses energy individually or collectively. Activities might include energy retrofits, renewable energy upgrades, behavioural change initiatives, hosting community energy events, development of energy cooperatives and energy master plans.

Energy in Buildings
This award recognises organisations who have implemented exemplar sustainable and low-carbon approaches to building design, construction and operation, and delivered energy efficiency projects showing leadership to industry. Projects should demonstrate a sustainable approach and reductions in carbon emissions through design, management and operation of the building. Applications are welcome from new-build or substantial retrofit projects, in residential or commercial settings.

Research – €10,000 Bursary Prize
This award is aimed at companies, research organisations or public sector/ semi-state bodies involved in impactful energy research and innovation. Entrants should have researched and developed innovative energy technologies, processes or systems that will contribute significantly to Ireland's clean energy future.

Energy Team/Manager of the Year
This award celebrates individuals, teams or organisations across the public, private and voluntary sectors. Entrants will need to demonstrate leadership and ambition in implementing energy management, and delivering multiple significant benefits for their organisations over a prolonged period.

Renewable Energy Solutions
This award is aimed at organisations that have developed large-scale renewable installations, services or products or other innovations that have had a substantial impact on Ireland's energy transition. Entries should represent a striking achievement in the development and deployment of renewable energy at scale in Ireland.

See www.seai.ie/events/sustainable-energy-awards/ ■

The Lindab Safe System

When it comes to counting the cost of energy the facts are pretty straightforward. The more your ventilation system leaks, the more it costs to run. If your system doesn't leak you will need less power, save money and reduce your carbon footprint. Lindab Safe presealed air duct components fit together quickly and simply to give a perfectly sealed joint every time.

The advantages

1. Quicker to fit - helps you to save 12% on your installation cost and 39% on installation time. Comparison Vent-Safe acc.to BSRIA Report Act 5/2002 Data sheet 3.1.
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3. The gasket is manufactured from durable EDPM rubber which withstands +100°C continuous and +120°C intermittent.
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5. No need for any additional sealing or waiting for sealant to cure.
6. The gasket lips increase in size as duct dimensions increase to provide greater tolerance in installation.
7. Tests confirm that the long life EDPM gasket maintains air tightness for in excess of 15 years.
8. Fittings have a rolled edge which ensures concentricity and accuracy of dimension as well as making them more rigid, safe to install and safer to handle.

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Association for Consultancy & Engineering

'MAKING US INCLUSIVE, REPRESENTATIVE AND SUSTAINABLE FOR THE FUTURE'

The world is changing. Technological, environmental and human advances have disrupted many industries. The internet revolution has changed the way we shop, listen to music, watch TV and even engage with politics. Further advances in big data, AI and virtual reality are promising to do the same for many others, including consultancy and engineering, ***writes Hannah Vickers, CEO, Association for Consultancy & Engineering.***

Our industry now stands on the brink of the fourth industrial revolution. Led by data and technology, new tools are emerging, including self-monitoring infrastructure, offsite and modular construction, drones and virtual reality which enable engineers to monitor buildings from their desks, and digital design which takes minutes, rather than weeks. All of this is intended to help build the "smart" infrastructure society is demanding, such as more efficient turn-up-and-go transport networks and sustainable, yet affordable housing.

Engineering and technical consultancy remains the backbone of the economy as infrastructure investment is critical to ensure post-austerity growth. In this economic and political environment, our industry is more important than ever before. However, with the demands we are now facing, is our sector, collectively, ready to meet this challenge? It is clear that in order to do so a change is required – not just on a technical or project level, but on strategic, market and industry levels too.

It's evident that within this new prism there are significant opportunities for firms to improve outcomes and deliver better-quality services for the end-users of infrastructure, but this must be enabled by the actions of the government and private sector clients. They are ultimately responsible for creating the environment which will allow us to bring forward the best the industry has to offer. Exploiting these new technological opportunities will improve the productivity of our sector and its export potential.

I unveiled ACE's *Future of Consultancy* campaign in November 2018. This is a multi-year, two-phased campaign which will firstly scope new areas of opportunity, identify and explore new business models for consultancy, and analyse the sector's changing needs in terms of skills.

Secondly, the campaign will pull together findings from phase one and focus on enhancing existing revenue streams and the development of new ones. We'll also be looking at piloting tomorrow's training, apprenticeship schemes and contracts, and creating effective and fit-for-future-purpose industry forums and partnerships to support a vibrant, profitable and sustainable sector.

All of this will help our members, no matter what their size, seize the opportunities that lie ahead of us. However, for this to happen, we will need to build a consensus for change, not just among ACE members, but with wider stakeholder and government bodies too.

There are many possibilities open to us in supporting our clients, and we have divided these into three areas based on the asset lifecycle:

Strategic planning and placemaking

A better understanding of user requirements helps clients to "optioneer" the best solutions, making trade-offs in what they value to get to the best-quality design for a community. An increase in data and digitally-enabled modelling gives consultancy the tools to apply its expertise in a more strategic way, requiring a maturity shift in client mentality away from capital cost to the ultimate objective of defining outcomes. Their willingness to pay for these outcomes enables industry

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to bring forward more productive solutions such as offsite manufacturing at scale across a programme.

Delivering integrated projects

This touches on the importance of core disciplines of successful delivery in information management, programme management and production management, but we can go beyond this by exploring our remit as consultancy businesses in integrating funding streams across multiple clients, and perhaps finance across the whole asset lifecycle.

Data-led asset performance

Combining data and technologies available in both buildings and infrastructure to understand and optimise asset system performance, often against changing user requirements, means bringing to bear our tools and expertise to share learning and optimise the benefits across sectors and clients at a system level (Figure 1).

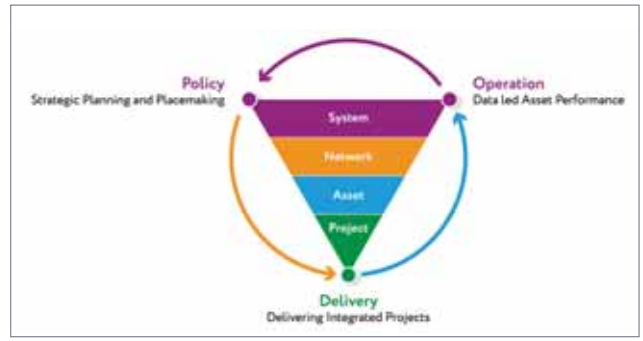

Figure 1

While these areas themselves are not new, the opportunities we have to support our clients within them will change as a result of the tools and data available to use in a digitally-enabled environment.

The value is in bringing together our collective offer in an integrated way to get the flow of data, products and expertise working around the whole life-cycle, and seamlessly across multiple clients. A truly valuable client partner will understand and mitigate risks, not just on a project but in how assets contribute to the network and in turn the network of other clients.

For large firms this means building on the existing model of mentoring, developing and championing expertise within your firm and your supply chain partners to ensure your integrated offer is a compelling one. For smaller firms it's about understanding where you add value in this model, often in multiple phases and perhaps in areas of the life-cycle that you don't currently get invited into.

This collective vision about how we can add value makes for a more compelling proposition for those looking to a future career in the industry. Between us, we offer different corporate environments, employment structures and a variety of work for a fulfilling, life-long career within the industry. If we can develop and articulate a more integrated industry with a vision to an individual, we can find a place within it to suit their needs and ambitions. In turn, this makes us inclusive, representative and sustainable for the future – without a skills crisis. ■

R452B GWP =676

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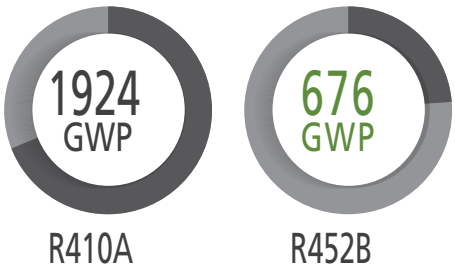

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INNOVATE TO DIFFERENTIATE
We do things others cannot, or dare not.

OUR CLIMATE & WATER AMBITION | Meeting UN Sustainable Development Goals

CLEAN WATER AND SANITATION

We will half our own water consumption by 2025. By 2030, we will have contributed to providing safely managed drinking water to 300 million people in need. In addition, through water-efficiency and water-treatment, we will have saved the consumption of 50 billion m^3 of fresh water.

CLIMATE ACTION

By 2025 we will reduce our own CO2 emissions by 50%. By 2030, we aspire towards "climate positive".

"GRUNDFOS PIONEERS SOLUTIONS TO THE WORLD'S WATER AND CLIMATE CHALLENGES AND IMPROVES QUALITY OF LIFE FOR PEOPLE"

SUSTAINABILITY IS IN OUR DNA

The role of pumps in the fight against climate change can be linked directly to energy and water conservation. Pumps account for 10% of the world's total electrical energy consumption and up to 90% of them are inefficient.

As water is required to produce energy, it stands to reason that if every inefficient pump was switched to an energy-efficient pump, the world could save around 4% of its electrical energy consumption and an amazing two billion m^3 of fresh water. Saving energy means saving water, and both add up to a healthier environment. In this context pumps are perhaps ***the*** most important element in the drive for true sustainability.

Sustainability is in our DNA. To us it is a mind-set, a way to do business. However, we have now anchored our future product and pump system development strategy to the UN Sustainable Development Goals. We know our pioneering products deliver market-leading efficiencies but the time has now come for us to consider the whole life-cycle. This demands systematically working with material selection, production, packaging, distribution, usage, lifetime and end-of-life disposal. As part of this holistic approach, we are now designing products in a way that facilitates re-use and recycling with maximum resource extraction.

Mitsubishi Electric Annual Conference – *Forward Together*

ELECTRICITY THE WAY FORWARD

The Mitsubishi Electric Annual Conference is now something of a landmark event in the building services calendar, noted as much for its emphasis on work/life balance and measured lifestyle, as for its focus on commerce and the bottom line. If anything, this year there was an even more noticeable shift to the holistic approach with the mix of speakers reflecting a very firm and professional, yet gentle, approach to business. The tone and content of their presentations, along with the relaxed delivery style, reinforced this.

In hosting the conference, Mitsubishi Electric set out a very definite programme for the event. In doing so, it declared a very firm agenda, and indeed intent, for the future. The theme for the two days – *Forward Together* – encapsulated it all. Mitsubishi Electric vowed to provide the innovative product/system solutions the marketplace requires, along with all necessary design, technical and business supports, and invited all those present to be part of the industry's, and Ireland's, sustainable future.

While the tone was relaxed and comfortable, the core message was very direct, strong and uncompromising. It was also a challenge to all present to stand up and make a difference … to take responsibility and not leave it to others.

Richard Sherlock, National Sales Manager for Living Environmental Systems, Mitsubishi Electric Ireland, perhaps best summarised the overriding message in this respect. He said it had been a great year for both Mitsubishi Electric and its trading partners, and cited in particular the success of Ecodan and HVRF. He acknowledged the contribution of all in making it such a success but then cautioned that there was still a great deal to do.

Ciaran Moody, General Manager, Mitsubishi Electric (left) and Rachel O'Brien, Marketing Executive (right) pictured with Brian Scully, Brian Scully Services, after the presentation to mark Brian's long association with Mitsubishi Electric and his standing back from the business in favour of son, Kevin, who is now at the helm.

Building Services News spoke with him in depth about this later, and especially his assertion that the environment is now the critical area of concern. This fact was forcefully borne out by the local and European elections just days after the conference with Green Party representatives making considerable gains all over Europe.

What is the key issue?

Never before has there been more focus on, or need to focus on, protecting and improving the environment, and rightly so. The question now is, how do we make the change? The answer is simple … we all have to take responsibility. There are of course commercial constraints on us all – individually and collectively – and the simple fact that big ships take a long time to turn around. In this sense there is none bigger than pan European environmental policy, how countries implement it, and the effects on worldwide competitiveness. These are undeniably complex but we are now at a stage where we have no choice but to solve them.

Sounds simple but …

As well as the major policy areas, we've also got to implement appropriate macro policies by way of countless micro actions. We need habit-changing action in all areas of our lives, we need to always ask why?, and also why not? Why do I heat my house with oil? Why don't I have energy efficient lighting in my office? Why don't I make the small changes that would have a combined large impact?

We need to stop resisting … to buy in … to believe. As an industry sector we must show leadership in making, and

promoting, this transition in terms of understanding, specification, adoption and installation. We must design for tomorrow … not today.

Any sign of hope?

Yes, there is, but we, as the leaders at the coalface, have to drive that momentum. Residentially, in a few short years oil has gone from the mainstay for new housing to less than 1% of new-builds. Ten years ago heat pumps were not thought about as a mainstream product and look at that situation today.

We need to stop looking at reasons why we can't do things and start looking at why we can, and should. Heat pumps prove this radical shift is possible, regardless of the political, commercial and historical barriers.

How significant is electricity?

The electric economy is not just coming … it is here. It may be relatively small but is growing rapidly. We are moving towards nZEB for new buildings and even this is a very challenging scenario. However, residentially, the elephant in the room is the one million plus existing homes that are in urgent need of retrofit. Aspiring to deep retrofit presents an even greater challenge. That said, the electric economy is the way forward; it is where the solutions lie.

The good news is that this need for genuine sustainability and real efficiency is driving innovation and encouraging pioneering product development and technologies across all aspect of our daily living. Heat pumps, electric cars, hybrid vehicles, PV panels, more energy efficient lighting, pumps and air conditioning are all now coming on stream. What they have in common is that they are all electrically-driven. Unlike the "switch if off " message of previous generations, we are now being encouraged to use electricity, but with the emphasis on using it responsibly.

Reflecting the dynamic (and fun) tone of the afternoon session are Tony Duffy, Technical Services Manager, Fergus Daly, Sales Manager, Eastern Region and Andy Keegan, Consultant Support, all Mitsubishi Electric Ireland; David Meade, keynote speaker; Ciaran Moody, General Manager, Mitsubishi Electric Ireland and Richard Sherlock, National Sales Manager for Living Environmental Systems, Mitsubishi Electric Ireland.

Where to now?

Electricity is the main energy of the future, especially for a windswept island such as ours. Here mass generation is not just a possibility, but something that is already being realised, and can be multiplied. However, we need to make appropriate policy and regulatory changes. We also need to change our energy-usage habits.

We need to interrogate and challenge our current network supply, delivery and service models, and to make the necessary changes to allow us make this energy transition happen.

Mitsubishi Electric Ireland is very much involved in research and pilot schemes throughout the country and evidence-based data from these demonstrates and confirms the real-life efficiency of our products. These schemes cover all market segments and include commercial and domestic applications, along with churches, schools, etc.

Given the challenges posed to the environment and our urgent need to address them, the evidence is clear … electricity is the way forward for a commercial and environmentally-sustainable future. ■

Morning session speakers included Brian Montayne, ESB Innovation; Richard Sherlock, National Sales Manager for Living Environmental Systems, Mitsubishi Electric Ireland; Martin Fahey, Mitsubishi Electric UK, Head of Sustainability & New Business; Ciaran Moody, General Manager, Mitsubishi Electric Ireland; and Dr Mark Rowe, medical doctor, author and expert in positive health and lifestyle medicine

CLIMATE EMERGENCY? ...

Yes, so let's turn up the gas

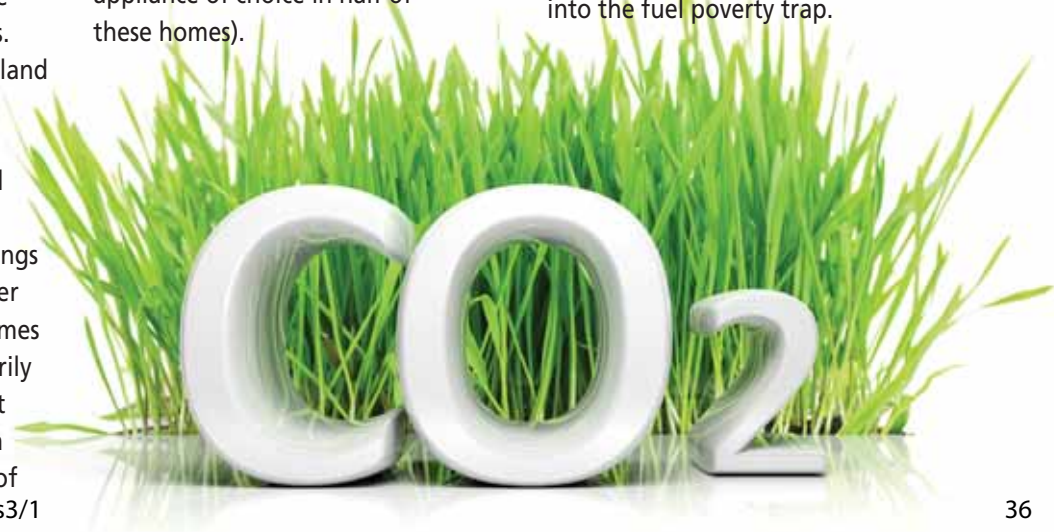
Faced with global warming, more frequent extreme weather incidents such as heat waves, severe cold spells and torrential downfall, environmental campaigners are right to declare there is a climate emergency. How we respond will be judged by future generations, but part of the answer should, indeed must be, turning to gas for the solution, *writes Mike Foster, CEO, the Energy and Utilities Alliance (EUA).*

Energy experts in the UK have coined the term "the trilemma" to describe the competing challenges of reducing carbon emissions, maintaining energy security for consumers and keeping costs low. It's a well-known expression and one that accurately acknowledges the challenges faced by policymakers. Those same priorities apply in Ireland too, albeit against a different energy demand landscape.

But one thing both the UK and Ireland do have in common is a similar demand for heat in buildings … we share a similar climate after all. In the UK, around 85% of homes are heated by natural gas, primarily with central heating boilers. That figure has grown since North Sea Oil became an abundant source of energy in the late 1970s. Consumers are used to central heating, they know how it works and our energy-inefficient building stock copes with this method of keeping people warm and providing them with hot water. (Moreover, gas cookers are the appliance of choice in half of these homes).

In Ireland, oil is still a major source of energy supplied to homes, especially those not in the greater conurbations where natural gas is the predominant fuel source. Like gas, heating oil is also a fossil fuel that emits carbon when combusted in a boiler but there is no escaping the science … gas is cleaner than oil (carbon intensity some 33% less) and cheaper too. So, extending the gas network, where economic, to serve homes makes sense on all three of the trilemma challenges. Gas supplies are secure and arguably more convenient for consumers than heating oil.

The alternative first offered in the UK to the carbon emissions of both gas and oil was that of all-electric heating. It is still advocated as the silver bullet by some … I refer to them as "fundamentalists" in that they simply cannot see the problems. Both gas and oil are energy sources that can be easily stored. Electricity is costly to do so, and battery capacity and costs are prohibitive. For the consumer, electricity costs are a real stumbling block. In the UK, according to the Energy Savings Trust, average gas costs 3.74 pence (about 4.3 cents) per kWh compared to electric at 15.75 pence (about 18.1 cents) per kWh. Fuel poverty in the UK is a growing problem. There are an estimated 4.5 million households living in fuel poverty and the UK Government calculates a further one million are within £100 of falling into the fuel poverty trap.



As one of Europe's leading heating technology manufacturers, "thinking ahead" is a culture which is embraced throughout our business. Our products feature high energy efficiency ratings and low emissions, and come with an enviable reputation for performance, quality and reliability. We have introduced the smart Green iQ badge to denote this benchmark for outstanding quality and it is now featured on the new ecoTEC exclusive range which manages consumption and output to keep all its components running at peak performance for longer, and provide a low-maintenance solution. It consists of two large-output combination boilers (35kW, 43kW) with extra-condense technology, and a single-system boiler (27kW), which includes an integrated diverter valve with all delivering up to 94% efficiency.

The humble gas boiler, relied on by so many for heat and hot water, is not the enemy in the fight against climate change but an ally. The challenge is to decarbonise the gas it uses.

So, unit energy prices matter. But delivering the required amount of electricity needed to meet peak winter demand is also a problem. In 2018, when the "Beast from the East" hit, the UK saw 214GW of local gas demand on 1 March. The day before, between 5am and 8am, saw gas consumption increase by 116GW. To put this number into perspective, peak electricity supply over the 2017/18 heating season was just 53GW with the highest 5am to 8am being a paltry 16GW.

Put more bluntly, the UK did not have the power to keep its citizens warm without the gas network. If the choice is all-electric and going cold, or utilising the well-established, world-leading gas network, then there is only one answer. But we need to acknowledge (and act accordingly) that gas, while relatively cheap and flexible, is still a fossil fuel. So how do we square that with our need to curb carbon emissions?

Switching to cleaner fuels like gas, away from oil, can make some immediate impact. But if gas is to survive in the longer term, and this applies to oil too, it needs to decarbonise. EUA has been at the forefront of promoting "Green Gas" as the solution to the energy trilemma.

Around the globe, countries are turning to gas as a flexible, secure and cheap form of energy, but looking at ways to decarbonise it. The UK and Ireland are both active in this field. While there is no strict definition of "Green Gas", the very range of green gas options is a great attraction. In Ireland, where over a third of all greenhouse gas emissions stem from agriculture, finding a useful way of utilising a renewable and naturally-occurring form of methane is plain common sense. Biomethane injected into the existing gas network avoids the costly new infrastructure required to transport the gas from source to home, and Gas Network Ireland's ambition to have 20% of all gas supplied to be renewable by 2030 is a sensible approach to meeting the country's international obligations.

In the UK, green gas is taking on another dimension. Industry is examining the option of hydrogen gas (which contains no carbon) as a fuel to replace natural gas. It isn't such a giant leap as some fear. Up to the 1960s, "Town Gas" was a 50/50 hydrogen/methane mix and was only abandoned when North Sea oil was found in such abundance. So, blending hydrogen with methane seems an obvious first step. The HyDeploy Project based at Keele University is testing the case for blending 20% hydrogen into the existing gas network. At such levels, no adjustments are needed to existing boilers and other appliances, so consumer disruption is minimal. But carbon reduction is significant.

Further schemes are examining 100% hydrogen gas being distributed in the existing network. Initially centred on industry to meet demand for fuelling energy-intensive users, domestic consumers could have the benefit of carbon-free gas piped into their homes. The UK's leading boiler manufacturers have already developed appliances compatible with burning both types of gas. The simple switch of an appliance, done over time, will allow for an affordable and convenient transition to a low-carbon heating world.

The humble gas boiler, relied on by so many for heat and hot water, is not the enemy in the fight against climate change but an ally. The challenge is to decarbonise the gas it uses. This will ultimately prove to be a cheaper, less disruptive and achievable way of dealing with the climate emergency we face.

For further information contact Laurah Hutchinson-Strain on 0044 1926 513743 or email laurah@eua.org.uk www.eua.org.uk ■

EUA energy&utilities alliance

The Energy and Utilities Alliance (EUA) provides a leading industry voice helping shape the future policy direction within the sector. Using its wealth of expertise and over 100 years of experience, it acts to further the best interests of its members and the wider community in working towards a sustainable, energy-secure and efficient future.

EUA has eight organisational divisions – Utility Networks, the Heating and Hotwater Industry Council (HHIC), the Industrial & Commercial Energy Association (ICOM), the Hot Water Association (HWA), the Manufacturers' Association of Radiators and Convectors (MARC), the Natural Gas Vehicle Network (NGV Network), the British Energy Efficiency Federation (BEEF), and the Manufacturers of Equipment for Heat Networks Association (MEHNA).

Glow-worm Easicom – now available from C&F Quadrant

The Easicom high-efficiency boiler from C&F Quadrant has been designed with quality in mind and to further strengthen the Energy range from Glow-worm while, at the same time, providing reliable heating and hot water performance for homes.

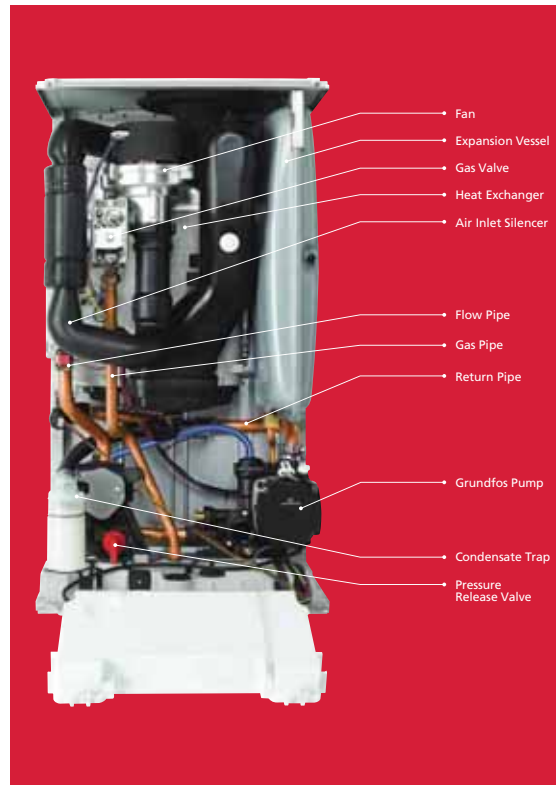
The new Glow-worm Easicom boiler is available as a combi boiler (24kW and 28kW outputs); a system boiler (25kW output); and a regular boiler (25kW output).

The Easicom comes with a free 3-year guarantee, and is available as a combi boiler (24kW and 28kW outputs); a system boiler (25kW output); and a regular boiler (25kW output). It is also suitable for homes with high hot water demand (when combined with a hot water storage cylinder).

The high-quality, aluminium heat exchanger at the centre of the Easicom ensures exceptional heating and hot water performance while the boiler is also easy to programme thanks to the bright, easy-to-read, LCD display.

The Easicom comes fitted with a straightforward analogue clock. However, it can also be installed with the complete range of Glow-worm advanced controls (including the popular MiGo app-based control) to offer even higher levels of efficiency and save even more on fuel bills.

The Easicom high-efficiency boiler has been designed with quality in mind and to further strengthen the Energy range from Glow-worm.



Cut-away section of the new Easicom boiler.

Features and benefits

- Free 3-year parts and labour guarantee;
- Package includes the boiler, horizontal flue and in-built analogue timer;
- Compact: Smart design to suit modern homes;
- Wide range of accessories: This includes a spacing frame and pipe-cover plate;
- High efficiency: ErP 94% A-rated boiler that helps reduce energy bills;
- LCD display: Bright LCD display with an easy-to-use interface.
- Instant hot water supply;
- Exceptionally quiet operation.

All Glow-worm controls have been designed to work with the Easicom boiler range, so they are simple to install and the householder gets the ultimate in running efficiency, convenience and comfort.

Contact: C&F Quadrant.
Tel: 01 – 630 5757;
email: sales@cfquadrant.ie;
www.cfquadrant.ie ■

FASTflo Plus ... until the cows come home


Larry Crean at work in the milking parlour.

With a herd of 100 Friesians to milk twice daily, Wexford farmer Larry Crean needs vast quantities of hot water to clean the parlour after milking, and also to wash out the storage tanks when they are emptied, to prevent Legionella bacteria from forming.

To date he was using a hot water cylinder with electric immersion heater, which proved to be very expensive, and so decided to explore a more cost-effective option.

On contacting Mark Murphy of IGM Gas Ltd – a Flogas Approved Installer – Larry was recommended to go for FASTflo from Andrews Water Heaters. These are supplied by Baxi Potterton Myson and run on LPG from Flogas that is stored in a tank on the farm. Mark specialises in this kind of installation and has carried out a number in partnership with Flogas and Baxi Potterton Myson. However, this was the first installation using the new FASTflo Plus condensing model.

The FASTflo Plus LWHiCX56 condensing instantaneous water heater can deliver up to 15 litres of water per minute at a 55˚C rise. It meets the requirements of the Energy-related Products (ErP) Directive and has an A rating. An external version is available, making the FASTflo Plus the perfect solution for a dairy farm, as it can be installed on an external wall, close to the milking parlour, even when space is at a premium.

The FASTFlo Plus installed on Larry Crean's farm.

Unlike a water storage cylinder with electric immersion heater, FASTflo Plus only heats the water as it is used, so there are no running costs when it is not in use. Water at the correct temperature for cleaning the milk lines and storage tanks is available at the touch of a button, making Larry's job on the farm much easier.

"I have all the hot water I need now," Larry told *Building Services News*. "The FASTflo Plus is performing very well, is making my life easier, and I am saving money on my fuel bills, too."

The Flogas tank on Larry Crean's farm.

Contact: Baxi Potterton Myson. Tel: 01 – 459 0870; email: sales potterton-myson.ie; or visit https://www.andrewswaterheaters.co.uk/products/condensing-water-heaters/fastflo-plus ■

GRANT

Multiple Package Solutions.

A heating system's overall efficiency can be significantly improved by **combining multiple technologies.** By installing an air source heat pump alongside a high performance cylinder and effective heat emitters, a home's heating system can be taken into a new class of efficiency. And, what's more, you can get **all of these products from Grant.**

Think Heating.
Think Grant.

To avail of our **free of change** heat loss calculations, send your planning drawings to **heatpump@grantengineering.ie** or call **057 912 6974**

Market moving towards premium/designer styles

While compact-style steel panel radiators are undeniably the most popular and best-selling radiators in Ireland, there is now a definite shift towards premium panel radiators, or decorative and designer options, depending on the application. This is true for both domestic installations and commercial projects.

Stelrad's Concord design radiators are available in horizontal and vertical versions, and in up to 36 colour options.

Today there is pretty much a radiator available for every application, be it a new-build home, a refurbishment project, or a special application that requires something specific to meet a particular need. The plethora of house refurbishment programmes on the various TV channels – such as *Grand Designs* and *Location, Location, Location* – undoubtedly whet the appetite. Not surprisingly, people see new radiator styles they like, are influenced to mimic the designs they see, and decide to upgrade their own heating systems.

It is not just a heating decision. Increasingly, homeowners want a say in the radiators they get and are looking for premium panel, decorative or designer radiators. This applies in particular to specific rooms, and definitely to bathrooms and en-suites.

Designer radiators or vertical versions of premium panel radiators are sought out for the living room, the entrance hall, master bedroom and the kitchen. This is to do with aesthetics, with homeowners choosing radiator styles for locations where visitors will see them and be impressed.

Increasingly, radiators are regarded as part of the décor, worth investing a little more in, rather than simply a means of sharing heat around the home. In some cases, they are quite literally a focal point of a room, even more so now that coloured radiators – in Stelrad's case, up to 36 different colours, with some available from stock – are growing in popularity. This allows interior designers, architects and more design-savvy installers select radiators that match or contrast the other decoration in a room.

Stelrad Vita Column Concept radiator.

Radiators are still responsible for sharing the heat in more than 90% of domestic heating systems, and a surprisingly high percentage of commercial properties as well, so the age of the radiator is still very much with us. Companies like Stelrad are going the extra mile to ensure that they continue to be an aesthetic choice as well as a common sense one, with a wide range of designs, an easy-to-install philosophy and the widest range of sizes to ensure that there is a radiator for pretty much every application that can be imagined.

Contact: Brian Hennessy, Stelrad Country Manager, Ireland. Tel: 087 – 210 2530; email: brian.hennessy@stelrad.com.

For information visit www.stelrad.ie. Brochures and information can be sourced at Tel: 00353 844 543 6200. ■

Stelrad Compact Vertex vertical radiator.

Grant delivers Multiple Package Solutions

Below: The Grant Aerona³ 6kW model heat pump.

Grant offers an extensive range of market-leading heating technologies which provides customers with unparalleled variety and the opportunity to take the efficiency of their heating system to a new level.

Over four decades Grant has placed innovation, efficiency and quality that is second to none at the core of its manufacturing process, resulting in an impressive product portfolio including award-winning condensing oil boilers, highly-efficient heat pumps and high-quality heat emitters, providing the ultimate full heating solution.

Complementing the manufacturer's ever-growing range of products, Grant also offers its customers trusted advice and the benefit of its team's specialist knowledge and service of providing specifications for a property's full heating requirements. In addition to outlining the required heat source, the Grant team can advise on accompanying hot water cylinders and heat emitters – including underfloor heating – making the whole process incredibly straightforward.

Grant's Aerona³ air source heat pump range is an increasingly popular choice for those seeking to meet Part L requirements outlined in Building Regulations and also boasts environmental benefits of helping end-users lower their carbon footprint. Featuring outputs of 6kW, 10kW 13kW and 17kW, Grant's Aerona³ range provides both heat and hot water to the property and has several intelligent features including greater operating efficiencies at lower external temperatures, larger outputs to match the type of property encountered, and reduced operational noise levels. Each unit can also deliver over four times the amount of energy for every 1kW of electricity used.

Underpinning Grant's commitment to providing the best products on the market, the recently-introduced A+++ 13kW model features R32 refrigerant gas which has a substantially lower global warming potential (GWP) than other typical heat pump refrigerants. This latest offering comes ahead of upcoming legislative targets outlined in the 2014 EU Fluorinated Greenhouse Gas Regulations and will be introduced into all models within the Aerona³ range in the coming months.

Grant's Monowave and DuoWave stainless steel hot water cylinders have been designed specifically to complement units within the Aerona³ range and feature a larger primary coil for faster heat transference and compression fittings which are strategically located to offer a straightforward installation.

The Grant Sahara Solar Thermal is also an excellent choice for those seeking clean and highly-efficient renewable energy and has many unique components including the Sahara flat collector, multifunctional controllers with LCD displays, and various mounting arrangements.

Based on the customer's heat source and cylinders, the Grant team can identify the best heat emitters to suit the property, whether this is a set of Grant Solo fan convector radiators, Grant Afinia aluminium radiators, or the integration of underfloor heating. Operating seamlessly with low temperature systems, the Grant Solo fan convector range features three models which provide faster rates of convection than traditional radiators and a noticeable boost of warmth to areas of that property that may be harder to heat.

There also is the Grant Afinia range, designed to integrate with both low and high-temperature heating systems, making them an ideal pairing for either a Grant Aerona³ air source heat pump or a Grant Vortex condensing oil boiler, depending on the customer's installation requirements. Offering great choice and flexibility, units within the range are available from 6-20 panels as either standard or vertical radiators.

Think Heating. Think Grant.

Visit www.grant.eu for more information on Grant's range of innovative heating solutions. You can also follow Grant on Facebook and Twitter@GrantIRL or Instagram @Grant_IRL. ■

MHI Air-Conditioning Europe gets a new makeover

Mitsubishi Heavy Industries Air-Conditioning Europe (MHIAE) is committed to helping people live better wherever they're based. Whether that's finding more energy efficient heating solutions to reduce greenhouse gas emissions or providing a reliable air-conditioned infrastructure in tough environments, the company strives to offer a solution to a very important aspect of life … temperature.

This breadth of expertise within MHIAE and the extensive solutions available has resulted in trusted, long-term partnerships with customers. These partnerships are boosted by the support of the wider MHI Group which has a legacy of creating innovative technology that has shaped the world we live in for over 100 years.

MHIAE's unique and impressive story deserves recognition and acknowledgement, and so the company has embarked on a new awareness campaign. This showcases its strengths as forward-thinking pioneers who inspire not only the people who work within the company, but also the designers who specify the products, contractors who install them and the clients who use them.

MHIAE and MHI Values

To build on what's been achieved to date the company first surveyed employees and distributors in a branding workshop and asked them what they felt the key strengths and values were. The outcome? There were plenty of positives to choose from that were encapsulated by such phrases as customer centric; responsive; reliable; excellent service; innovative; easy to work with; long-standing experts; precision craftspeople and high-quality products to name but some.

These are important and impressive attributes but, in the opinion of MIHAE, by themselves these business benefits did not differentiate the company enough from the rest of the market. Consequently, it looked deeper into its core company values. In asking people to describe the wider MHI's brand personality it got the insight that was needed. "Trusted people from a reliable company, who get things right" to "creating technologies for the future that help people live in a better world" were among the deeper emotional values and benefits attributed to the wider MHI Group brand.

Temperature control for today and tomorrow

Using this feedback, the company created a new MHIAE brand identity which brings these values to life. Visually, it introduced the "little planet/ecosystem" visual representing "your world" or "your life". Here, a temperature control icon lies at its centre to depict how the various product solutions offered lie at the very heart of life, offering temperature control for today and tomorrow.

This new identity promotes MHIAE as a major player in global air conditioning solutions, as a true pioneer with a strong heritage with reliable operations and an innovative approach. These attributes will be evident in all marketing collateral going forward.

This initiative is an inspiring and exciting move for all within the MHI "family" and the company looks forward to seeing how it grows and develops business for employees and trading partners alike in 2019 and beyond.

See www.mhiae.com for full details. ■

SEAI ENERGY SHOW

Wilo Zetos K10 wins Energy Efficient Product Award

The recent award recognition at the SEAI Energy Show (in the Best Innovative Product Category) for the huge energy saving potential and material versatility of the Zetos K10 borehole pump is a testament to the new design, and research and development, invested by Wilo SE in bringing new, innovative products to the market. Indeed, is was further endorsement for the Zetos as it has already been recognised with similar awards throughout the UK where the water authorities have embraced the new technology it represents.

Five years ago Wilo SE had single-digit market share of the borehole market in the UK and Ireland. However, since the redesign and product evolution, the market share has multiplied thanks to award-winning material engineering and component rationalisation/optimisation.

The Wilo Zetos K10 was designed to be ecologically advantageous in manufacture and operation, and to take advantage of new materials and manufacturing methods. Component optimisation has assisted in reducing machining time by 84% and reducing embedded carbon by 73%, while simultaneously improving operational efficiency to 88% peak and 84% average.

The new 10" pumps cover 10", 12" and 40% of 14" applications. This saves water authorities time and money, and removes un-scheduled challenges. They have up to four times wear resistance compared to standard material designs, meaning high efficiencies are retained for longer.

The K10, launched commercially in 2018, provides high efficiency, high corrosion resistance and high wear resistance. It is suitable for pumping drinking water and offers easy maintenance with a simple system for the installation and dismantling of hydraulics.

It is manufactured using an innovative new process called "precision cast" which has allowed Wilo to redefine hydraulic efficiency. This means reduced machining by 84% and leads to reduced embedded carbon, reduced manufacturing costs and shorter delivery times along with a lower list/sales price.

Its prime function is in raw water extraction from boreholes. With higher percentages of drinking water coming from boreholes, this has become a vital tool for water companies to extract water effectively and efficiently. The new award-winning Ceram Teflon coating applied to the borehole impeller overcomes the worst problems associated with ochre deposits which are common in water extraction.

A leading water authority said: "We have been dealing with Wilo pumps for about five years now, having become aware of its innovative Zetos range of borehole pumps. It is now an established supplier to us, with strong technical advice on hand when we need it, and always honest answers to queries. This makes for genuine collaboration on projects. An added advantage is that the pumps are proving to exceed efficiency and longevity predictions which, when combined with competitive pricing, design advice and technical support make for an excellent partnership. Wilo is also our 2019 Supplier of the Year."

Contact: Wilo Ireland. Tel: 01 – 426 0000; email: sales@wilo.ie; www.wilo.ie ■

Opposite: Michael O'Herlihy and Derek Elton pictured on the WIlo stand at the SEAI Energy Show 2019 having received the award.

GREG TRAYNOR
AN APPRECIATION

Just recently the building services industry in Ireland lost a true friend and guiding light of many years, Greg Traynor. The Traynor name has been prominent in the industry since Greg's father (Noel Snr) followed a career in all aspects of building services engineering further to an apprenticeship in a major contractor's office in Dublin in the 1930s. Noel Snr subsequently moved to Northern Ireland during World War II, designing services for American bases and hospitals, returning to Dublin after the war to build the new sanitoria with the Department of Health. Greg qualified from UCD in Mechanical Engineering and Building Services Engineering in Southbank Polytechnic (now Southbank University). He followed his father into consulting engineering and lived and worked in London and San Francisco. Much of this international experience was incorporated into innovative designs, particularly in industrial projects, on his return to Dublin.

Noel Snr and Greg founded the practice of JN & G Traynor & Partners in 1974 and over the next 38 years – until his retirement in 2012 – Greg enjoyed the challenges, the innovations, the latest technologies and more importantly, the people who worked in all areas of the industry. Greg's brother, Noel Jnr, and his sister, Michaele, also spent time in the practice.

I began working in the practice in 1995. It was immediately apparent that if you had a problem with a job and a spot of reassurance or lateral thinking was required, a conversation with Greg would either solve the issue or give you the confidence that you were making the correct decision. I recall one incident in which I was given the task of designing an escape route pressurisation system for a large multi-storey building. Greg was away at the time and I spent two days poring through the relevant British Standards and estimating the size of air gaps between landing doors etc. The client was on the phone every couple of hours looking for the fan size and panic had set in. Greg arrived back late on the afternoon of the second day and, after the customary *"Allo Allo Allo"* delivered in a deep baritone voice, was met with panic from me and the client on the phone frustrated and annoyed. At this stage I had about five completely different fan ratings. He calmly asked me *"what's your best estimate at this stage?"*. I told him my best estimate and he said *"that sounds about right – double it!"*. It worked. He adopted this calm approach at all times to all situations. Perhaps this is missing from the industry today.

As stated previously, Greg had a keen interest in people in the industry and enjoyed meeting other consultants, contractors and sales representatives. No matter who you were and whether you came to the offices by appointment or unannounced, there was always a coffee or tea on offer. The conversation at these meetings invariably strayed from the topic in hand into industry scuttlebutt, mutual acquaintances, musicals, literature or one of the vast arrays of interests that Greg found time for while managing a busy practice.

Greg devoted much time to the industry outside of work and sat on many committees of Engineers Ireland and CIBSE Ireland. He was Chairman of CIBSE Ireland in 2000-2001. His father, Noel Snr, was also Chairman of CIBSE Ireland in 1970-1972. Greg took a keen interest in the formation of young engineers and always promoted the profession to prospective students. His adoption of low energy technology was ahead of its time and his experimental mind lead him to implement low energy technology (MVHR, LED Lighting & Ground Source Heat Pumps) in the refurbishment of his own house. The systems were controlled and monitored by a complete building management system and he took a keen interest in the validation (or not) of the manufacturers claims against this measured data.

Greg had a keen interest in technology, both in building services technology as well as office technology. The practice was one of the first to adopt CAD systems (Microstation and later AutoCad) and even though the practice had a small staff, regular updates to computer systems and servers were made to the consternation of Noel Snr: *"What do you want another one of those boxes for"*. I don't think the practice actually needed these regular upgrades but each new upgrade brought additional computing power for Greg's interest in acquiring knowledge by Web researching. We would often divide the workload on a tender with Greg taking charge of the specifications and I designing and drawing. After a number of hours into the work, I would wander over to check a point with Greg but he could not be be disturbed as he would be half way through an academic paper on some obscure topic from an even more obscure American university. He had

a very high intellect and had a breadth and depth of knowledge that I have never come across before or since. No matter what the problem or issue, work-related or not, consulting the "Oracle" was always the wisest thing to do.

The advent of high-speed broadband into the office brought many benefits but also some drawbacks. Once again, when specifications were being prepared by Greg, the Web would be consulted for details of an air handling unit and ten minutes later the screen would be showing something connected to science, nature or the arts.

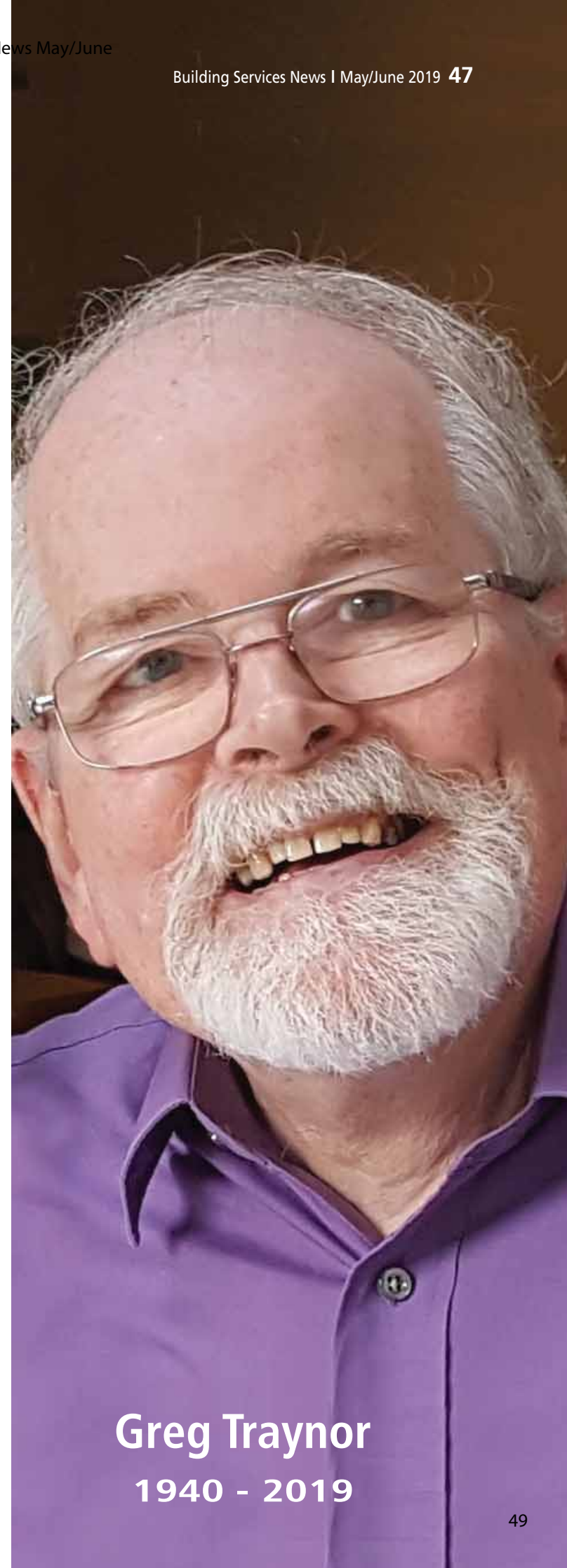
Greg had a great love of all things artistic and was a member of various musical societies and appeared in a number of shows over the years. He also had a great love of literature and enjoyed using quotes when the opportunity presented itself. When, as a junior engineer, I had completed a report Greg would wander over and note that he would review the report to add: *"Merely corroborative detail, intended to give artistic verisimilitude to an otherwise bald and unconvincing narrative"* (W.S. Gilbert, The Mikado). His narrative was not confirmed to artistic classics and when a statement was made that *"surely the radiator can't be that size"* this was often met with *"it is, and don't call me Surely"* (The Naked Gun).

Greg was something of a hoarder of books and magazines of all descriptions. The office had collections of IHVE, CIBS, CIBSE, IEI, Engineers Ireland and ASHRAE magazines dating from the earliest editions. Engineering books and catalogues dating from the late 1800s were also collected. Upon moving out of the office in Lansdowne Terrace in 2008, this collection had to be sorted and decisions made whether to bring them with us, donate them or bin them. A couple of hours into this sorting, we would be merrily filling black sack after black sack. Checking on Greg's progress would invariably find him engrossed in a fascinating article from an early edition of a magazine or a concert programme with little or no progress made with the task in hand. We discovered that this work was best carried out when Greg was out of the office and the bags taken away before his return!

Greg retired in 2012 and divided he time between Toronto and Dublin. He never lost interest in the industry, particularly the people in it, and each time we met he would ask about the practice, the latest technologies and, most importantly, the industry gossip and who was still "vertical and mobile". Greg's passing has left a void in the industry in a place reserved for a true gentleman.

Go n-éirí an bóthar leat
Go raibh an ghaoth go brách ag do chúl
Go lonraí an ghrian go te ar d'aghaidh
Go dtite an bháisteach go mín ar do pháirceanna
Agus go mbuailimid le chéile arís,
Go gcoinní Dia i mbos A láimhe thú. ■

Alex Foran



Greg Traynor

1940 - 2019

Heat Merchants leads by example, takes to the road and strikes gold!

In a major demonstration of support for the shift to green energy, Heat Merchants Group has installed over 470 solar photovoltaic (PV) panels on the roof of its business support offices and central distribution hub in Athlone. The installation covers 835sq m of roof area and is expected to generate over 85% of the company's electrical energy demand at the site.

The new Solar PV installation will generate up to 150kWp of renewable power and will reduce consumption from the grid by approximately 120,000 kWh per annum, thereby preventing approximately 63,480kg of harmful carbon dioxide (CO_2) from being released to the environment.

Heat Merchants has also embarked on a series of roadshows to promote the adoption of green energy throughout the country. The first event was held in the Maldron Hotel in Wexford recently and included presentations by Alan Hogan, Eamon Kent and Enda McGowan of Heat Merchants, Brian Hennessy of Stelrad, Walter Stephens of Panasonic and Orla Coyle and Emer Burton of SEAI.

Between them they covered everything to do with renewables, from legislation through to compliance, grants, technical support and the dreaded form-filling. The 60 plus contractors, technical advisors and BER assessors present were given a comprehensive overview of the opportunities Ireland's drive towards renewables presents, and the means by which they can access and maximise the support mechanisms available from SEAI and Heat Merchants. *Building Services News* will have a more comprehensive report in the next edition.

Heat Merchants Group team pictured at the Deloitte Best Managed Companies Awards were Shane Colleran, Hugo O'Brien, Alan Hogan, Suzanne Devlin, Paul Halpin and Mark Walker.

Meanwhile, in another development Heat Merchants Group received the gold standard accolade at the annual Deloitte Best Managed Company awards recently. Companies are awarded this designation following a detailed qualification and judging process that evaluates their entire management team and their business strategy.

Alan Hogan, Managing Director, Heat Merchants Group said: "The management and staff of Heat Merchants and Tubs & Tiles are exceptionally proud of this achievement and it is a testimony to the dedication and hard work of every member of the team that the company was able to meet the high standards required to be awarded the Gold Standard by Deloitte." ■

Alan Hogan, CEO of Heat Merchants Group, former Climate Action Minister and local TD, Denis Naughten, and Ian Watkins, Heat Merchants National Facilities Manager.

Maximise Energy Performance with Panasonic's New PRO-HT Tank

Panasonic has introduced a new high-performance range of PRO-HT Tank that is now available in a variety of capacities to suit commercial applications. The PRO-HT Tank DHW unit is optimised when used with the ECOi 3-pipe solution thanks to an innovative heat recovery system which produces hot water without a booster, maximising energy performance.

The range includes the PRO-HT Tank DHW unit which comes in three capacities: 1000lt, 500lt and 200lt (PAW-VP1000/500/200LDHW). When used in conjunction with ECOi 3-pipe units, the 1000lt tank can produce free DHW up to 65˚C via a heat recovery system, reducing operating costs and energy usage. This solution provides a high COP rating of up to 6.70, making it an ideal cost-saving solution for large commercial applications such as hotels.

Featuring double pipe Nano technology, the PRO-HT Tank DHW unit provides excellent heat transfer thanks to a compact pipe-in-pipe heat exchanger, with an inlet and outlet pipe clearance space of just 0.1mm. This helps to reduce heat wastage, saving costs for commercial customers. When connecting to R32 PACi or ECOi 2-pipe units, the maximum output of domestic hot water reaches 75ºC and has an energy efficiency Class A+ rating. Also available in the range is the PRO-HT Tank heating and cooling option with a 380-litre capacity.

The PRO-HT Tank range is treated with internal and external metal surface pickling to remove impurities such as stains, inorganic contaminants, rust or scale from ferrous metals, copper, precious metals and aluminium alloys to avoid corrosion for the entire lifetime of the tank. It also provides an efficient and cost-effective solution for commercial spaces of every size and scale.

It is easy to install and there is no need for additional accessories, thereby saving time and installation costs. In summation, PRO-HT Tank offers a reliable and future-proof solution that also helps clients to reduce the environmental impact of their buildings.

Contact: Vincent Mahony, Ireland Sales Manager, Panasonic. Tel: 087 – 969 4221; email: vincent.mahony@eu.panasonic.com ■

Panasonic's PRO-HT Tank comes in three capacities: 1000lt, 500lt and 200lt (PAW VP1000/500/200LDHW). It is optimised when used in conjunction with ECOi 3-pipe units.

AquaForce® Vision 30KAV with Greenspeed intelligence is Carrier's range of variable-speed screw chillers. They have first-phase cooling capacities ranging from 500kW up to 1100kW and reach exceptional levels of seasonal efficiency.

The AquaForce® Vision 30KAV with Greenspeed™ intelligence is Carrier's most efficient, intelligent and compact variable-speed screw chiller.

'Carrier AquaForce® – most efficient, intelligent and compact variable-speed screw chiller on the market'

Carrier's AquaForce Vision 30KAV achieves outstanding energy performance. Equipped with variable-speed screw compressors and variable-speed fans – AC as standard and EC as an option – as well as optional variable-speed pumps, Carrier's AquaForce® Vision 30KAV automatically adjusts the cooling capacity and water flow to perfectly match the needs of the building or process load variations. The result is optimal operation at both full load and part load.

This new range of chillers has a SEER of up to 5.5 in cooling mode and an Energy Efficiency Ratio (EER) of up to 3.49 at full load. In addition, the 30KAV offers energy efficiency up to 40% higher than the 30GX range with the same footprint.

"Carrier's engineers have developed state-of-the-art technologies that now exceed the European Ecodesign Energy Performance Standards by 30% and are already fully compliant with the 2021 Ecodesign regulations", says Steve Wood of Core AC. "Essentially, AquaForce® Vision 30KAV sets a new benchmark for efficiency, compactness and intelligence".

Operating at external temperatures ranging from -20°C up to 55°C and negative water temperatures, 30KAV is an ideal solution for a wide range of applications. From large-scale office buildings, hotels and healthcare facilities to data centres and industrial projects, 30KAV meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate.

The cutting-edge technologies now incorporated in the AquaForce® Vision 30KAV range include:

- Introduction of the latest cutting-edge Carrier technologies;
- A new 06Z variable-speed screw compressor;
- The sixth generation of Flying Bird® fan with EC motor;
- The third generation of Novation® micro channel heat exchangers with a unique W coil design built in one single piece.

The AquaForce® Vision 30KAV also features Touch Pilot® control with a colour touch-screen user interface in 10 languages and functions. These include Carrier's smart energy monitoring to provide customers with smart data and to optimise energy savings under real conditions. Furthermore, the 30KAV can be connected to Carrier's remote monitoring centres where Carrier engineers can analyse data and optimise chiller performance.

With sound levels of only 90 dB(A) during operation, this new range has particularly low sound levels compared to its previous generation. The AquaForce® Vision PUREtec™ 30KAV-ZE version, designed exclusively for ultra-low global warming potential (GWP) refrigerant HFO R-1234ze is also now available.

Contact: Steve Wood, Core AC.
Tel: 01 – 409 8912;
Mobile: 086 – 380 3882;
email: steve@coreac.com ■

RACGS GOLF

Mount Juliet hosts Captain's Day

Mount Juliet was the venue for Fergus Daly's Captain's Day recently as RACGS saw a record turnout tackle a course that was as challenging as ever, especially this early in the season.

Nonetheless, the amazing weather compensated somewhat and the 60 or so golfers enjoyed a wonderful occasion. Apart from the golf, there was the usual fun and banter with Fergus providing much of the entertainment in his own inimitable style.

Mitsubishi Electric sponsored the outing and Fergus Daly presented the prizes. The results were as follows:

Overall Winner: Ger Darcy, H14, 37pts.

Class 1 Winner: (won on Back 9) – Kevin McGarry, H13, 33pts;
Runner up: Declan Walsh, H8, 33pts.

Class 2 Winner: (won on count back) – Alan Rasmussen, H18, 32pts;
Runner up: James Darcy, H19, 32pts.

Front 9: Liam Hoctor, 17pts, (won on count back).

Back 9: Mick Clancy, 19pts.

Longest Drive: Mossie Walsh.

Nearest the Pin: Brian Kennedy.

Visitor: Tony Marshall.

Overall winner at Mount Juliet was Ger Darcy pictured here with RACGS Captain Fergus Daly.

Dave Hickey, Johnny Lynagh, Liam Hoctor and RACGS captain Fergus Daly.

John Reynolds with teammates Mick Curran, Dave McDonald and Ciaran Moody, Mitsubishi Electric, sponsor.

RACGS Captain Fergus Daly with Mick Clancy, winner Back 9.

RACGS Captain Fegus Daly with Alan Rasmussen, winner Class 2.

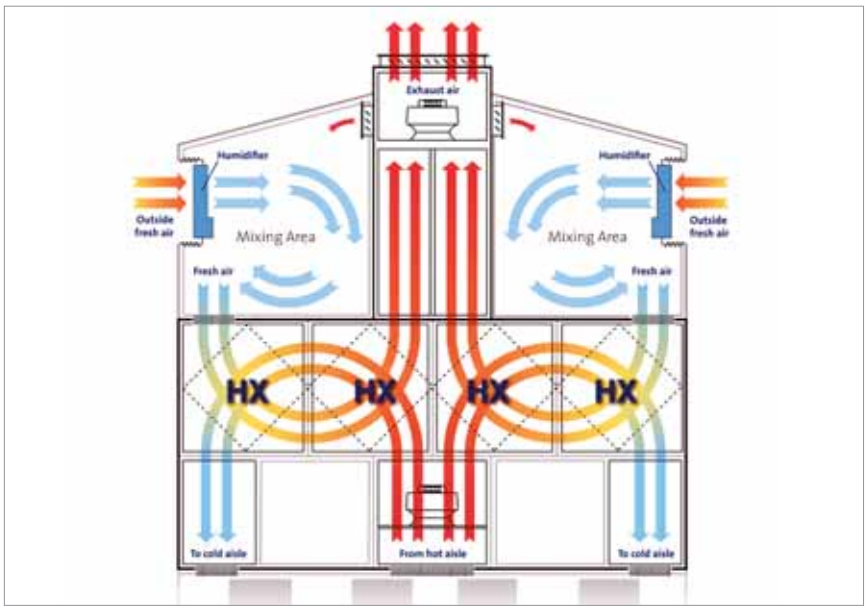
Condair helps EDPAC cool at CIX

The Condair ME evaporative humidifier is providing adiabatic cooling in an innovative indirect cooling system from EDPAC at the Cork Internet Exchange (CIX) in Ireland.

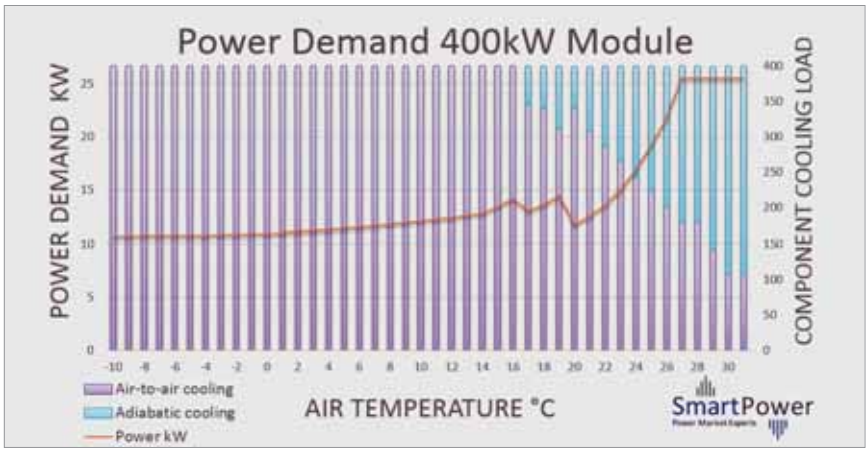
EDPAC's indirect air-to-air evaporative cooling system will maintain the temperature across CIX's data halls without using any chillers and with 75% less energy than a traditionally-cooled data centre. The installation of the new low-energy cooling system was part of a €6 million extension at the family-owned 2,800sq m data centre, partly funded by the Excellence in Energy Efficient Design (EXEED) programme (see *Building Services News*, November/December 2018).

The EDPAC air handling system cools without chillers by creating two airstreams – one internal and one external. The internal airstream circulates air to and from the data halls and the external airstream draws in, then vents, ambient outside air. Both airstreams pass through a series of heat exchangers to transfer cool thermal energy from the external to the internal airstream, without either mixing.

In order to boost the cooling capacity of the system and keep the data halls at 24°C all year round, evaporative cooling is used to reduce the temperature of the external airstream below that of the ambient outdoor air. A series of Condair ME evaporative humidifiers are located in the walls around a penthouse ventilation area, created across the top storey of the building. As air is drawn into the building through louvres, it passes through these Condair MEs before entering the penthouse ventilation area where the EDPAC AHUs are located.



Condair ME helps EDPAC cool at CIX.



CIX AHU module power demand and cooling graph.

The Condair ME consists of an evaporative matrix section, which sits across a duct, and a hydraulic module that continually pumps water up to the top of the matrix to keep it moist. As air travels through the Condair ME's wet matrix, it absorbs water and is cooled by several degrees.

Noel Lynch, Managing Director at EDPAC, comments: "The complementary technologies of air-to-air heat exchange and humidifier-based evaporative cooling is a considerable improvement on existing indirect data centre cooling systems. The strategy offers very low energy climate control and is easy to manage, as it doesn't have a wet spray section with the onerous administrative obligations that entails."

Four AHU modules, each delivering up to 400kW of cooling, have been installed above the data halls at CIX, alongside four Condair ME evaporative humidifiers. While the outside weather remains below 21°C, air-to-air cooling alone is sufficient to maintain the required data hall condition. When the outdoor temperature rises above this, the Condair MEs operate to provide up to 300kW of cooling to each AHU.

Donal Deering of Smart Power, the energy consultancy that worked on the project, commented: "The expected electrical demand over the year is just 12kW per 400kW AHU module, including the electrical consumption of the Condair ME evaporative humidifiers. Typical PUE values across Irish data centres is 1.5-1.7 but the use of adiabatic cooling at CIX will lower the facility's overall PUE to less than 1.4. The energy savings are expected to be 75% of that which would otherwise be used in a traditionally cooled data centre." ■

CLINT OPTS FOR R452B

The scientific consensus on the dramatic effects of global warming has convinced many nations, companies and individuals to take measures to try and limit this phenomenon. *The EU is leading these measures through the Low Carbon Road-Map 2050*, a plan aimed at reducing, by 2050, the greenhouse gas (GHG) emissions by 80% compared to 1990 levels.

The *Low Carbon Road-Map 2050* also involves the HVAC sector, requiring the industry to act on two factors – reduce the direct impact linked to the release of refrigerating gases that contribute to the greenhouse effect (F-GAS Directive); and reduce the indirect impact, that is the consumption of primary air linked to equipment operation (EcoDesign Directive).

"It is against this background that Clint has developed units with R452B and because extensive research has shown that its features are most similar to R410A", says Steve Wood, Core Air Conditioning Ireland, Clint's Ireland distributor. "Also, and unlike R32, it is compatible with heat pump and multifunctional units. Consequently, and first to the market, Clint has introduced an extremely wide range of R452B units with scroll compressors cooling only, reversible heat pumps, and multifunctional 4-pipe units from 50kW to 1,22 kW. These new units can operate with the same oil and with a working range similar to the corresponding ranges in R410A."

Turning to R32 – some manufacturers have an interest in both direct-expansion and hydronics – this is a refrigerant that is well-known for many years but, until now, has not been used in its pure state. This is primarily because it has a certain flammability, operates at high pressures and has high discharge temperatures. The R410A semi-zeotropic blend was developed to mitigate these three negative aspects. Adding a 50% concentration of R125 fluid helped to inhibit flammability (in fact, R410A is in Class A1), achieve slightly-lower operating pressures, and lower discharge temperatures compared to pure R32. The side-effect of this mixture is that the R125 fluid has a high GWP (3,500), bringing the R410A mixture to GWP values equal to 1,924.

From a performance point of view, R452B, compared to R32, is more similar to R410A, having maximum condensation pressures slightly lower than R410A, and about 2-bar lower than R32. Furthermore, R452B has lower compressor discharge temperatures than those of R32 (even 20-30°C in heat pump operation).

This is why the main compressor manufacturers recommend using R452B, while with R32 it is required to use compressors designed specifically for this fluid and which use a different lubricating oil.

The R452B refrigerant is available for all of Clint's air-cooled and water-cooled on/off multi-scroll ranges, cooling only, reversible heat pump and multifunctional 4-pipe units. Specific units are also available with free-cooling technology. However, units with R32 refrigerant cannot boast such breadth of application. With the components currently certified on the market, R32 is only suitable for cooling-only applications.

For full details on R452B in general, and the new Clint ranges, contact:
Steve Wood, Sales Manager,
Core Air Conditioning Ireland.
Tel: 01 – 409 8912;
email: steve@coreac.com;
www.coreac.com ■

Clint AquaPlus chiller

SPECIAL REPORT

T Bourke celebrates anniversary in style

The Little Museum of Dublin was a fitting location for the T Bourke 50th anniversary gathering recently as much of what is charted there, in terms of the history of the city, is mirrored in that of the T Bourke story. When Ted Bourke established the business in 1968 his focus was the immediate future, not half a century ahead.

Eamon O'Brien and Seamus Homan with Niall and David Bourke.

David Bourke addressing the large attendance in the Little Museum of Dublin.

However, now that that day has arrived, it is a shame that his recent untimely death denied him the chance to celebrate this auspicious milestone. However, sons David and Niall, fellow directors and staff – and a vast gathering of industry friends and colleagues – marked the occasion in style.

Ted's dedication to the business was all-consuming. He was undoubtedly a force to be reckoned with, and even a hard taskmaster. That said, trading partners and staff alike vouch for his sense of honesty and fair play. His sense

John Sullivan, Linesight with David Doherty, T Bourke, Joe Lee, JV Tierney and Simon O'Brien, Homan O'Brien.

of integrity was fundamental to the entire operation and this core philosophy still lies at the heart of the T Bourke business today.

While the mood of the evening in the Little Museum of Dublin was reflective, the core message was not one of a journey's end but rather a new beginning. This 50-year landmark is seen as the foundation upon which T Bourke's growth and development over the next half-century will be built. ■

Tom Keane, Project Management with Liam Casey, John Paul Construction.

John Lavelle, T Bourke (retired) with Niall Bourke.

Tom Parlon with Tara Flynn, Paul Flynn Construction and Jim Rogers, Varming Consulting Engineers.

Guests enjoying a tour of the many different-themed rooms that make up the Little Museum of Dublin.

Enda O'Connor and Joe Garry, JJ Rhatigan.

Niall Meagher, IPML with David Bourke.

Cara Bourke with Ciara Byrne and Graham Merrigan, T Bourke.

David Doherty, T Bourke with Joe O'Neill, Kavanagh Tuite.

Mona Holtkoetter, Chairperson, CIBSE Ireland with Brendan Duffy, Gilligan Architects.

Niall Bourke with Declan Hughes, Callaghan Engineering.

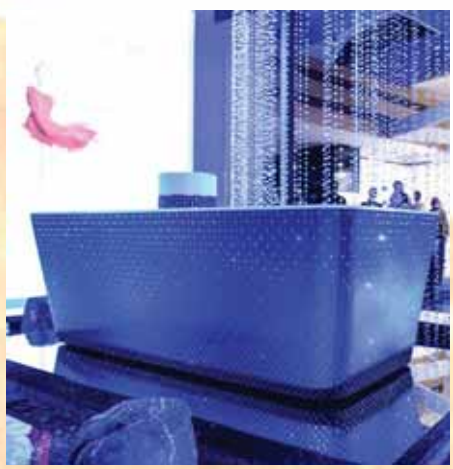
Finn Ahern, JV Tierney with Sean O'Toole, Standard Controls.

EXHIBITION REVIEW

ISH SHOWS FUTURE FOR HVAC + WATER

ISH, the world's leading trade fair for HVAC + Water, once again gave an impressive demonstration of its importance for not just German, but also international visitors and exhibitors. Indeed, a large contingent of building services industry personnel from Ireland were evident in the various exhibition halls over the course of the week-long show.

New concepts and new products were very much to the fore with the innumerable solutions on display reflecting the fundamental notion that achieving climate targets is only possible by interconnecting systems and trades.



From 11 to 15 March around 190,000 visitors from 161 countries attended the show with the change in the sequence of days (Monday to Friday) proving to be very popular.

New and very helpful for visitors at ISH 2019 was the revised structure of the programme of events with the subdivision into three main categories – Selection, Skills and Career – making it easier than ever to identify areas and events of interest.

Selection@ISH brought together projects that made it easier for visitors to obtain a concentrated overview of the whole range of products at ISH. Based on themes or objective criteria, guided tours and special exhibitions, as well as competitions and award ceremonies, provided structured insights into the extensive range of products to be seen.

Career@ISH was a special feature tackling the issue of skills shortages and dealt with topics about education and

EXHIBITION REVIEW

training. In addition, innovative start-ups got the chance to show their products and software solutions.

Skills@ISH clustered the variety of the lecture programmes offered by ISH. Numerous forums, seminars and lectures at ISH offered the opportunity to gather information, to exchange views and opinions, to develop and expand skills and to acquire knowledge around topics about the responsible management of water and energy in buildings.

The HVAC + Water sector is also confronted by numerous other issues, all of which were highlighted at the show. New regulations and requirements for climate protection and resource conservation are challenging the industry to develop new, efficient products at ever-faster intervals. In addition to major innovations from established companies, the new Start-up@ISH area offered initial points of contact with a total of 28 young, innovative start-ups.

See full review at: www.ish.messefrankfurt.com ■

Lindab strengthens its commitment to Irish market

Lindab (Irl) Ltd has announced the appointment of two new directors to its board. Mark Moran is now the company's Engineering Director while Des O'Brien has been appointed Technical Director, with immediate effect.

Des and Mark have been employed by Lindab for a number of years, and bring a wealth of expertise and experience to their new roles. Both have worked in the industry for over 20 years. "We are pleased to welcome Des and Mark to the Lindab board, and we look forward to their valued contributions. They join the board at a very exciting time with Lindab further strengthening our position on the Irish market with the appointment of additional sales and technical support staff, and the planned opening of new, strategically-located, branch outlets," said Patrick Boland, Managing Director of Lindab (Irl) Ltd.

Above: Interior view of the Lindab trade counter/showroom area.

Centre: Newly-appointed Lindab (Irl) directors – Des O'Brien, Technical Director with Mark Moran, Engineering Director.

The exterior of Lindab's new Ballycoolin Branch in North County Dublin.

The appointment of Des and Mark coincides with the opening of Lindab's new trade counter in Ballycoolin, on Dublin's northside. "We are delighted to announce the opening of our new branch on Dublin's Northside" said Chris Halligan, Sales Director of Lindab (Irl) Ltd. "This new facility is located in close proximity to some of our largest customers, and will help with the efficient and speedy despatch of products to projects on the northside of the city."

The foregoing is part of a new expansionary programme initiated by Lindab (Irl), not just to grow its own market share, but to also help grow the businesses of its many trading partners. Quality of service, in addition to quality products and system solutions, is now the sector's primary market requirement and Lindab (Irl) aims to lead by example in delivering this.

Contact: Lindab (Irl). Tel : 01 – 456 8200; email: sales@lindab.ie; www.lindab.ie ■

BTU GOLF

Luttrelstown kicks off season

A full time sheet is always a good sign, especially for the first outing of the year, and the capacity attendance at Luttrelstown Golf Club for the BTU's first of the season has set a benchmark for the remainder of the season. The calm before Storm Hannah made for a pleasant day's golf and thanks to Conor Lennon and Mulleur Europe who sponsored the outing. Results were as follows:

Overall winner: Brian Harrison, 36 pts.
Class 1 Winner: First: Connor Lennon, 35 pts; Second: John Lavelle, 34 pts.
Class 2 First: Brendan Bracken, 29 pts; Second: David Rossiter, 29 pts.
Class 3 First: T Fitzpatrick, 31 pts; Second: Jason Warnock, 31 pts.
Visitor: Ken Francis, 36 pts.

Luttrelstown: BTU Captain Padraig Gillen with overall winner Brian Harrison and Connor Lennon, Mulleur Europe.

Luttrelstown: Second prize winner Class 1, John Lavelle with Connor Lennon, Mulleur Europe.

Challenging Forrest Little

As expected, Forrest Little presented most of the participants with a serious challenge. That said, the weather was excellent and the fairways and greens were well presented and overall it was a most enjoyable day. Forrest Little is an old, established course and there is no denying that local knowledge is a definite advantage. Unsurprisingly, local club member Mick Matthews won on the day. Results were as follows:

Overall winner: Mick Matthews.
Class 1 John Lavelle.
Class 2 Brian Harrison.
Class 3 Des Binley.
Front Nine: Tom Fitzpatrick. **Back Nine:** Liam McDermott.
Visitor: Pat Quinn.

Forrest Little: Martin Keogh, Sirus, sponsor with Des Binley, winner Class 3.

Forrest Little: Martin Keogh, Sirus, sponsor with Brian Harrison, winner Class 2.

Forrest Little: Martin Keogh, Sirus, sponsor with Mick Matthews, overall winner and BTU Captain Padraig Gillen.

THE OBTUSE ANGLE

PAT LEHANE

Unlike Delaney, Paul Martin manages to secure publishing injunction against us

In his final act as CIBSE Ireland Chairperson Paul 'Delaney' Martin secured an injunction against *Building Services News* preventing publication of sensational revelations about his tenure in office. In a sting at the recent CIBSE Ireland AGM publisher Pat Lehane ambushed him and presented him with a framed copy of the cover of the planned forthcoming issue.

Paul was all smiles but, when he actually looked at the picture and realised that he had been rumbled, the mood changed dramatically. Unfortunately for our readers, Paul has connections in high places and he managed to secure an injunction against publication within the space of 24 hours. So, all we can share with you is this image from the planned cover.

PS: Of course it's all lies but it was an opportunity we simply could not pass up.

Oh pity Weary Weir!

Pity poor Stephen Weir (though Barry Ronan seems unconcerned). His golf handicap has plummeted, his sleep pattern is gone to pot, and his late nights are vastly different. While he still has a bottle in his hand at 3am in the morning, the contents are not really much to his liking. The reason? … the recent arrival of Annabelle Rose, his new baby daughter. Congratulations Stephen.

What value UK gas boiler ban?

While on the face of it the UK's proposed ban on installing gas boilers in new homes from 2025 may be a laudable aspiration, what, in reality, is it going to achieve in the short to mid-term?

There are a reported 30 million homes in the UK, the vast majority of which have gas boilers. Think of the multiple carbon and energy reductions possible if they were better insulated, had better windows, etc.

It could prove far more cost-effective, and effective, to incentivise measures to improve building fabric and thereby reduce carbon emissions and energy usage. The heat source/ generator is not necessarily the culprit when it comes to poorly-performing heating systems.

James proposes … eventually!

After more years than James can (or Mona cares to) remember, James Duff finally plucked up the courage before Easter and proposed to his partner Mona Holtkoetter. Not surprisingly, she said yes.

After all, when Arup first suggested a placement abroad from her native Germany for Mona nearly eight years ago, Dublin was not really top of her wish list … she had far more exotic locations in mind. However, on arrival in Ireland she found it had a lot to offer … including James. Hence she settled in very well. Congratulations to you both.

Every company should have a Fergus Daly

What a breath of fresh air Fergus Daly is. Thankfully, nearly everyone is very busy, if not overstretched, at the moment because of the volume of work and staff shortages. How refreshing then to have someone who can inject fun and levity into this pressure cauldron, even in the middle of serious business presentations/discussions. Fergus' interjections during the recent Mitsubishi Electric Conference in the Slieve Russell Hotel put a very welcome human perspective on the proceedings.

What shade green?

The gains by the Green Movement in the recent European elections is heartening. However, let's hope it is not yet another "anti-establishment" vote. It will be interesting to see what substance there is to the policies/ inputs of these newly-elected Green representatives over the coming months.

ideal
COMMERCIAL

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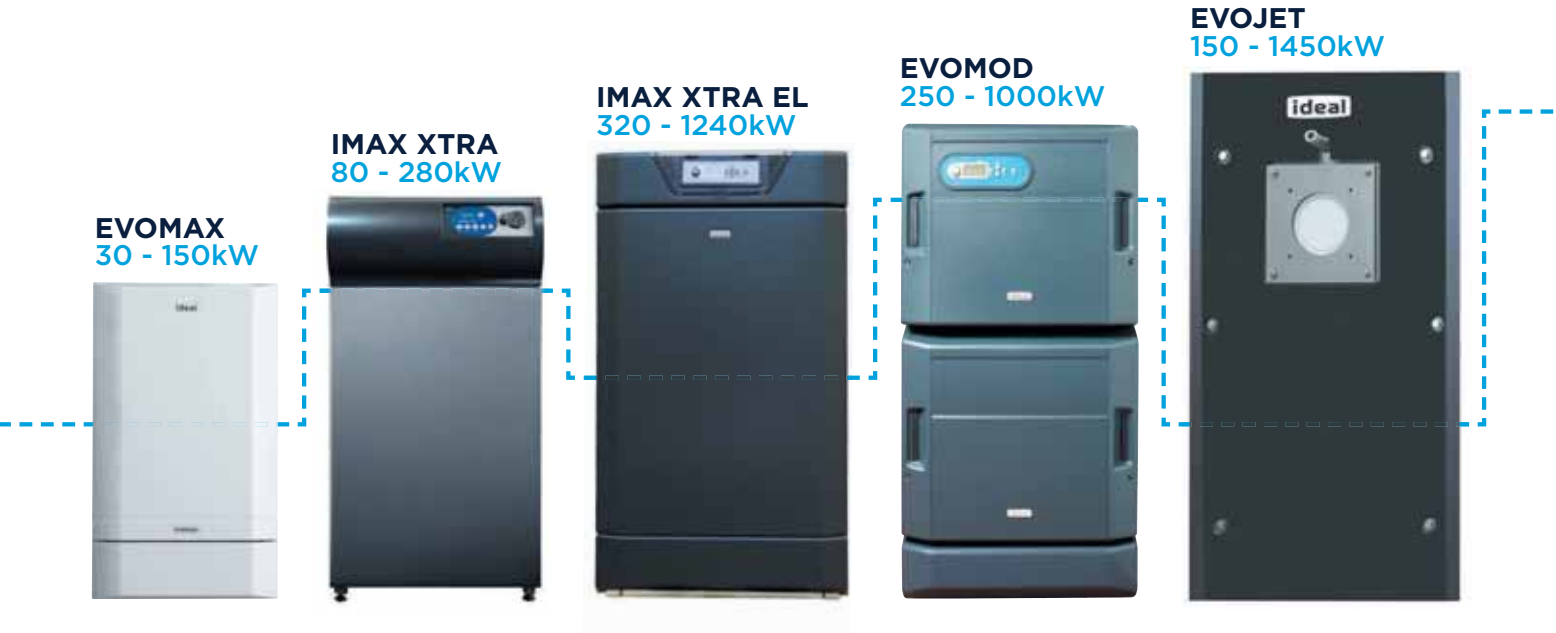

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